

# Wybory samorz?dowe - Krak?w - Analiza

October 16, 2017

## 1 Analiza

- plik zawiera wyliczenia oraz cz wnosków z analizy wyników wyborów samorządowych w Krakowie w latach 2006, 2010 i 2014

```
In [2]: from bs4 import BeautifulSoup
        from urllib.request import urlopen
        from lxml import html
        from lxml.cssselect import CSSSelector
        import requests
        import pandas as pd
        import matplotlib.pyplot as plt
        import geocoder
        from mpl_toolkits.basemap import Basemap
        import numpy as np
        import matplotlib.colors as colors
        import scipy.stats
%matplotlib inline

In [3]: obwody2006=pd.read_csv("obwody2006_clean.csv")
        obwody2010=pd.read_csv("obwody2010_clean.csv")
        obwody2014=pd.read_csv("obwody2014_clean.csv")
        df_res_pres2006=pd.read_csv("res_pres2006.csv")
        df_res_rada2006=pd.read_csv("res_ra2006.csv")
        df_res_pres2010=pd.read_csv("res_pres2010.csv")
        df_res_rada2010=pd.read_csv("res_ra2010.csv")
        df_res_pres2014=pd.read_csv("res_pres2014.csv")
        df_res_rada2014=pd.read_csv("res_ra2014.csv")

In [4]: obwody2006['lat']=obwody2006['lat'].astype('double')
        obwody2006['lon']=obwody2006['lon'].astype('double')
        obwody2010['lat']=obwody2010['lat'].astype('double')
        obwody2010['lon']=obwody2010['lon'].astype('double')
        obwody2014['lat']=obwody2014['lat'].astype('double')
        obwody2014['lon']=obwody2014['lon'].astype('double')
def map_obwody_lat(nr):
    row=obwody2006[obwody2006['nr']==nr]
```

```

#print([row['lat'],nr])
lat=float(row['lat'])
return lat

def map_obwody_lon(nr):
    row=obwody2006[obwody2006['nr']==nr]
    lon=float(row['lon'])
    return lon

obwody2006=obwody2006.drop('Unnamed: 0', axis=1)
obwody2010=obwody2010.drop(['Unnamed: 0','obwod06'], axis=1)
obwody2014=obwody2014.drop(['Unnamed: 0','obwod06'], axis=1)
df_res_pres2006=df_res_pres2006.drop('Unnamed: 0', axis=1)
df_res_pres2010=df_res_pres2010.drop('Unnamed: 0', axis=1)
df_res_pres2014=df_res_pres2014.drop('Unnamed: 0', axis=1)
df_res_rada2006=df_res_rada2006.drop('Unnamed: 0', axis=1)
df_res_rada2010=df_res_rada2010.drop('Unnamed: 0', axis=1)
df_res_rada2014=df_res_rada2014.drop('Unnamed: 0', axis=1)

def gr_lat_lon(df, ob):
    df=pd.concat([df,ob[['granice','lat','lon']]],axis=1)
    return df

df_res_pres2006=df_res_pres2006.set_index("nr_obwodu").join(obwody2006.set_index('nr'))
df_res_pres2010=df_res_pres2010.set_index("nr_obwodu").join(obwody2010.set_index('nr'))
df_res_pres2014=df_res_pres2014.set_index("nr_obwodu").join(obwody2014.set_index('nr'))
df_res_rada2006=df_res_rada2006.set_index("nr_obwodu").join(obwody2006.set_index('nr'))
df_res_rada2010=df_res_rada2010.set_index("nr_obwodu").join(obwody2010.set_index('nr'))
df_res_rada2014=df_res_rada2014.set_index("nr_obwodu").join(obwody2014.set_index('nr'))
kandydaci=["majchrowski","po","pis","gibalala","lesniak","berkowicz","inni","votes","max_voters"]
komitety=["majchrowski","po","pis","gibalala","lewica","berkowicz","inni","votes","max_votes"]
kand_proc=["majchrowski_proc","po_proc","pis_proc","gibalala_proc","lesniak_proc","berkowicz_proc"]
kom_proc=["majchrowski_proc","po_proc","pis_proc","gibalala_proc","lewica_proc","berkowicz_proc"]

```

In [5]: krk\_map=Basemap(projection='merc', llcrnrlat=49.97, urcrnrlat=50.11, llcrnrlon=19.77, urcrnrlon=19.9)

```

In [6]: def plot_proc(df, column, title,vmin=0,vmax=0.65):
    plt.figure(figsize=(20,20))
    krk_map.scatter(df['lon'].tolist(), df['lat'].tolist(),s=df['max_voters']/10, zorder=1)
    krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000)
    plt.colorbar(shrink=.3, pad=.05, aspect=10)
    plt.title(title)

def plot_votes(df, column, title, vmin=0,vmax=550):
    plt.figure(figsize=(20,20))
    krk_map.scatter(df['lon'].tolist(), df['lat'].tolist(),s=df['max_voters']/10, zorder=1)
    krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000)
    plt.colorbar(shrink=.3, pad=.05, aspect=10)

```

```

plt.title(title)

def plot_proc_compare(df, column1, column2, title,vmin=-0.4,vmax=0.4):
    plt.figure(figsize=(20,20))
    krk_map.scatter(df['lon'].tolist(), df['lat'].tolist(),s=df['max_voters']/10, zorder=1)
    krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000)
    plt.colorbar(shrink=.3, pad=.05, aspect=10)
    plt.title(title)

def plot_votes_compare(df, column1, column2, title, vmin=-300,vmax=300):
    plt.figure(figsize=(20,20))
    krk_map.scatter(df['lon'].tolist(), df['lat'].tolist(),s=df['max_voters']/10, zorder=1)
    krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000)
    plt.colorbar(shrink=.3, pad=.05, aspect=10)
    plt.title(title)

```

Plan badania:

I. Analiza pozioma 1. Wybory prezydenckie - porównanie geograficznego rozkładu głosów poszczególnych kandydatów: a. rok 2006 b. rok 2010 c. rok 2014 2. Wybory do rady miasta - porównanie geograficznego rozkładu głosów poszczególnych komitetów: a. rok 2006 b. rok 2010 c. rok 2014

II. Analiza pionowa:

1. Wybory prezydenckie - porównanie zmian w rozkładzie geograficznym głosów na poszczególnych kandydatów:
  - a. Majchrowski
  - b. kandydat PO
  - c. kandydat PiS
  - d. Gibaa
  - e. Lesniak
  - f. Berkowicz
2. Wybory do rady miasta - porównanie zmian w rozkładzie geograficznym głosów na poszczególne komitety:
  - a. Majchrowski
  - b. PO
  - c. PiS
  - d. Gibaa
  - e. Lewica/Lesniak
  - f. Berkowicz

III. Analiza jakociowa obwodów: Analiza charakterystyki obwodów z największym i najmniejszym poparciem dla danego komitetu/kandydata

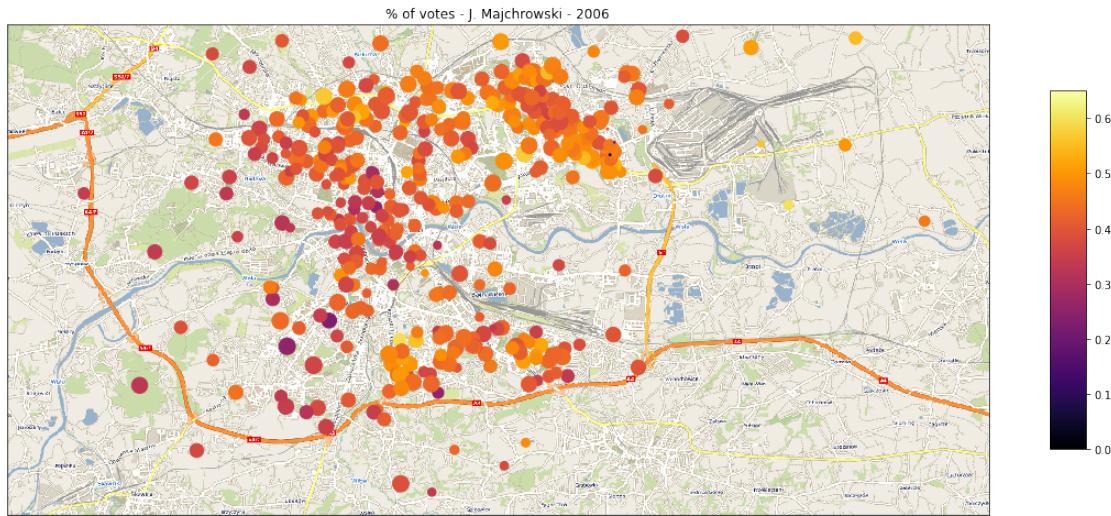
## 1.1 Analiza pozioma:

### 1.1.1 rok 2006

#### wybory prezydenckie

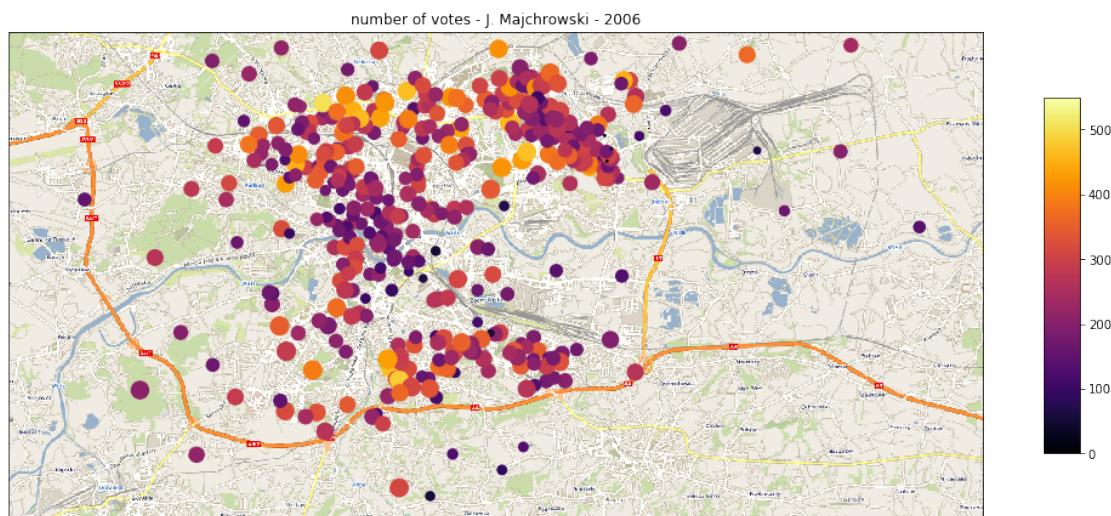
```
In [132]: #majchrowski proc
```

```
plot_proc(df_res_pres2006,"majchrowski_proc", "% of votes - J. Majchrowski - 2006")
```



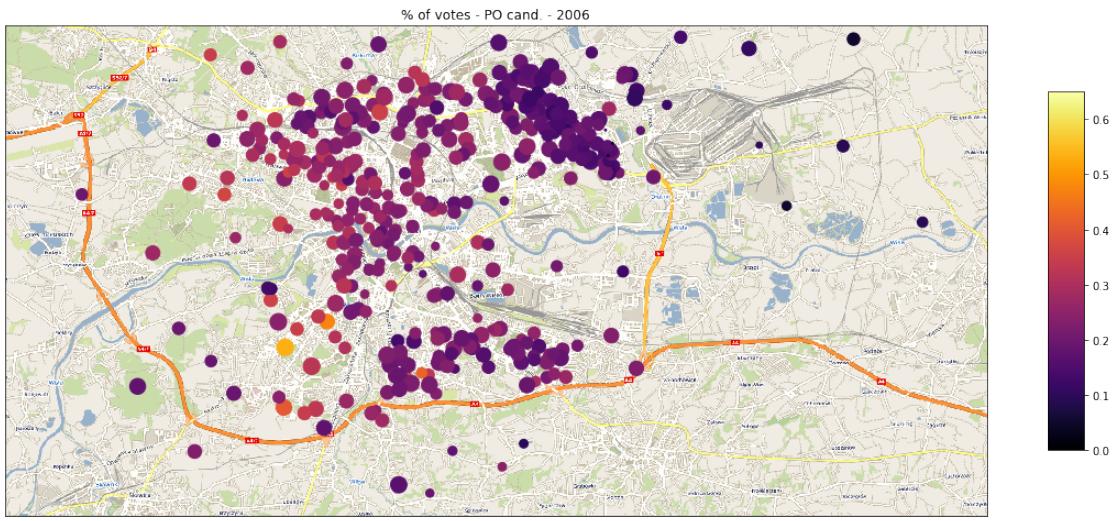
```
In [133]: #majchrowski votes number
```

```
plot_votes(df_res_pres2006,"majchrowski", "number of votes - J. Majchrowski - 2006")
```

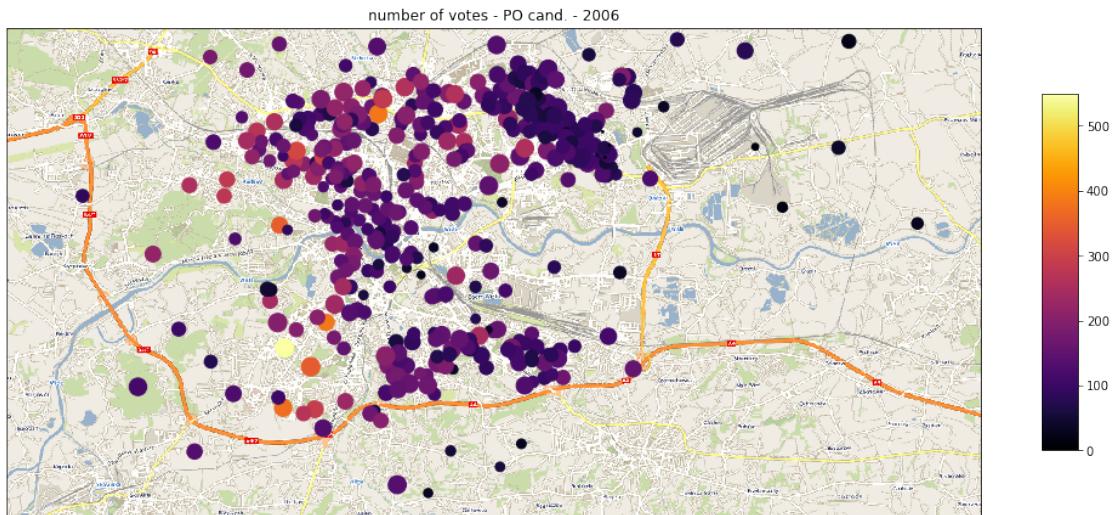


```
In [134]: #po proc
```

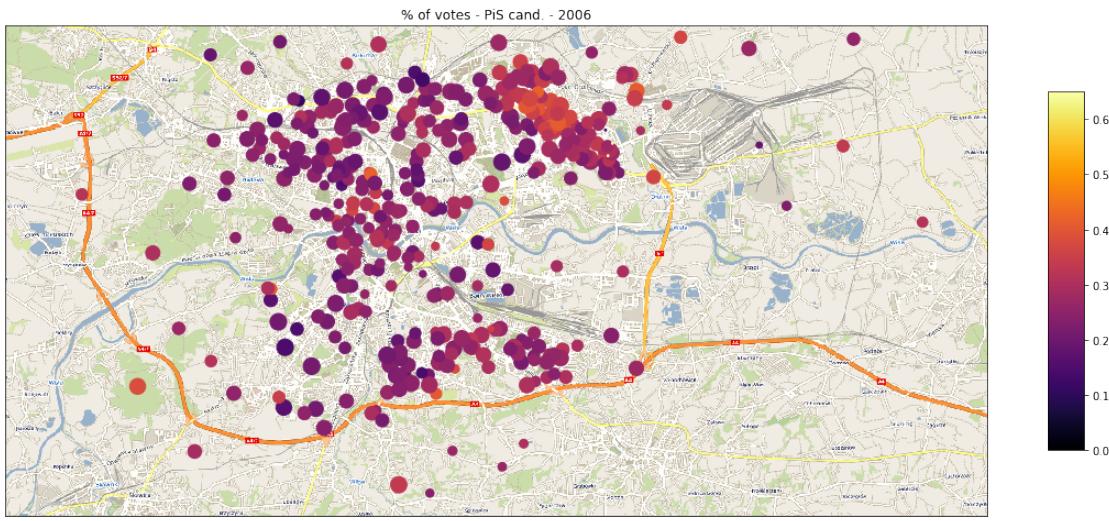
```
plot_proc(df_res_pres2006,"po_proc", "% of votes - PO cand. - 2006")
```



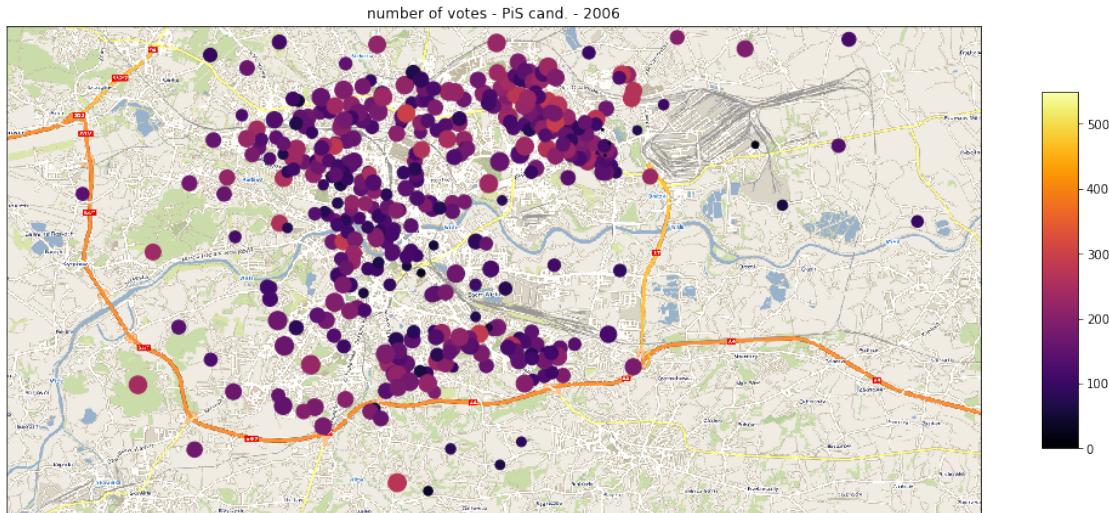
```
In [135]: #po votes
plot_votes(df_res_pres2006,"po", "number of votes - PO cand. - 2006")
```



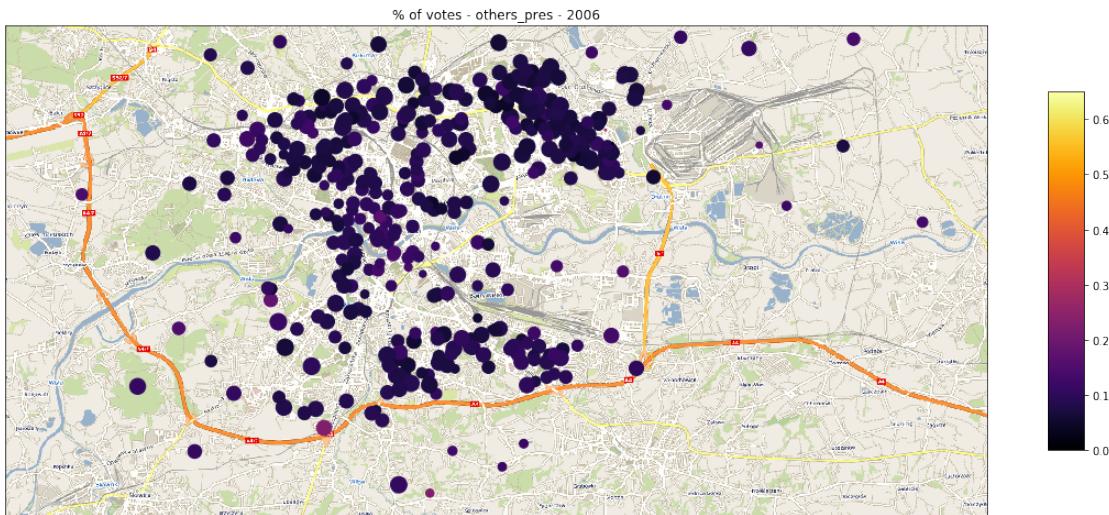
```
In [136]: #pis proc
plot_proc(df_res_pres2006,"pis_proc", "% of votes - PiS cand. - 2006")
```



```
In [137]: #pis votes  
plot_votes(df_res_pres2006,"pis", "number of votes - PiS cand. - 2006")
```

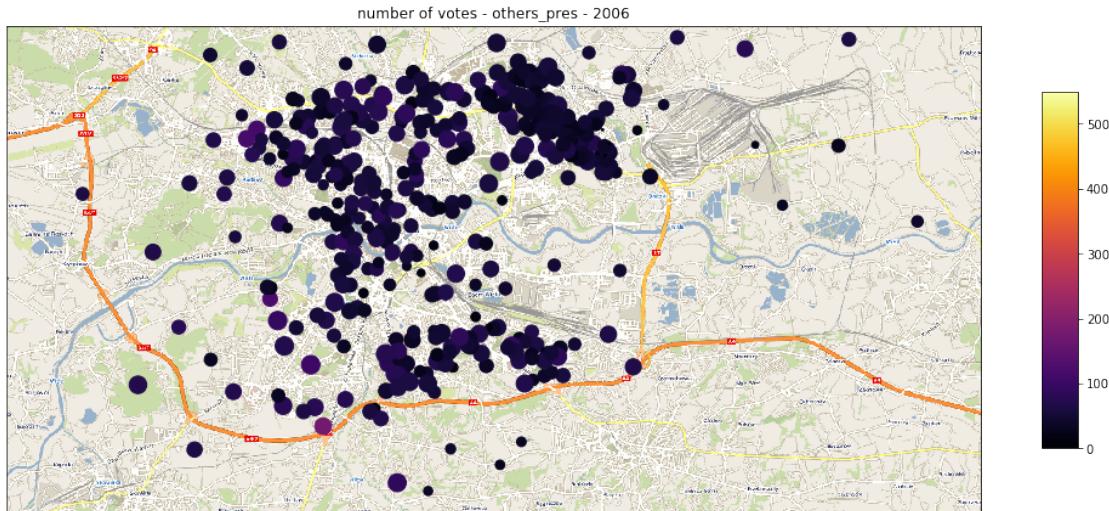


```
In [138]: #inni proc  
plot_proc(df_res_pres2006,"inni_proc", "% of votes - others_pres - 2006")
```



```
In [139]: #inni votes
```

```
plot_votes(df_res_pres2006,"inni","number of votes - others_pres - 2006")
```



```
In [16]: df_res_pres2006['pis_proc'].describe()
```

```
Out[16]: count      416.000000
          mean      0.266978
          std       0.065872
          min       0.113248
          25%      0.227743
          50%      0.260074
```

```
75%          0.299925
max          0.875000
Name: pis_proc, dtype: float64
```

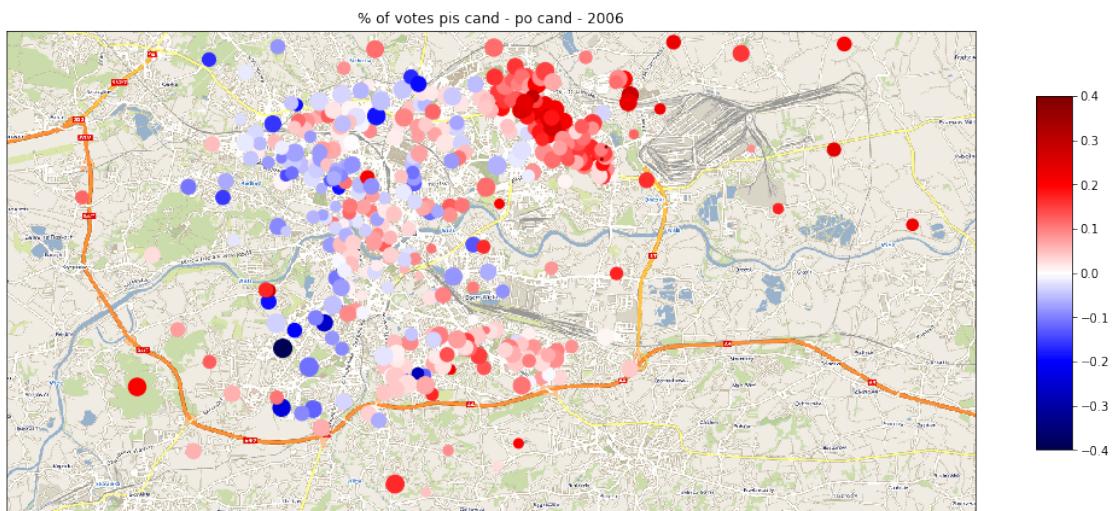
```
In [17]: df_res_pres2006['po_proc'].describe()
```

```
Out[17]: count    416.000000
mean      0.223452
std       0.062968
min       0.033333
25%      0.180738
50%      0.224573
75%      0.262381
max       0.534050
Name: po_proc, dtype: float64
```

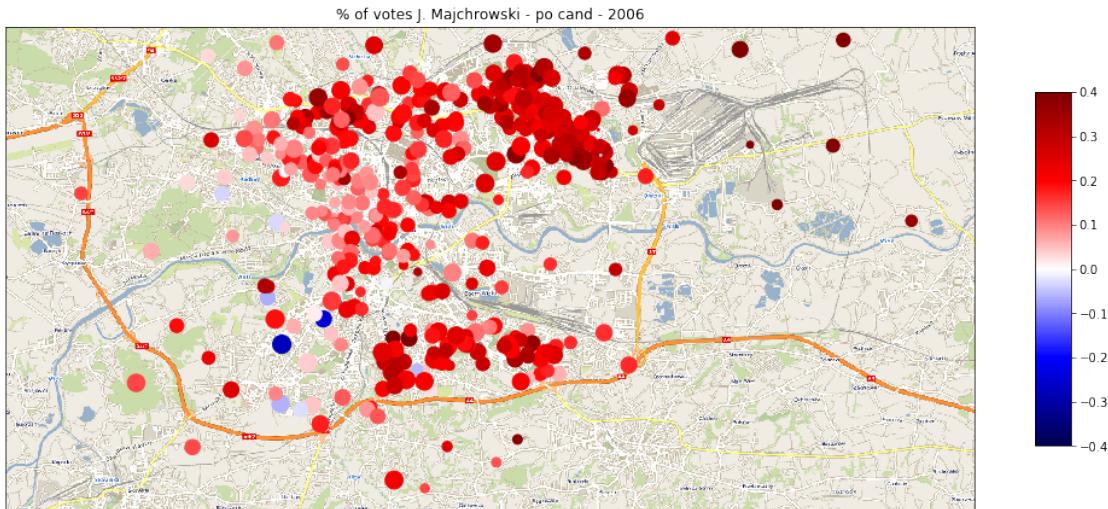
```
In [18]: df_res_pres2006['majchrowski_proc'].describe()
```

```
Out[18]: count    416.000000
mean      0.421827
std       0.060185
min       0.000000
25%      0.387584
50%      0.424121
75%      0.457336
max       0.597865
Name: majchrowski_proc, dtype: float64
```

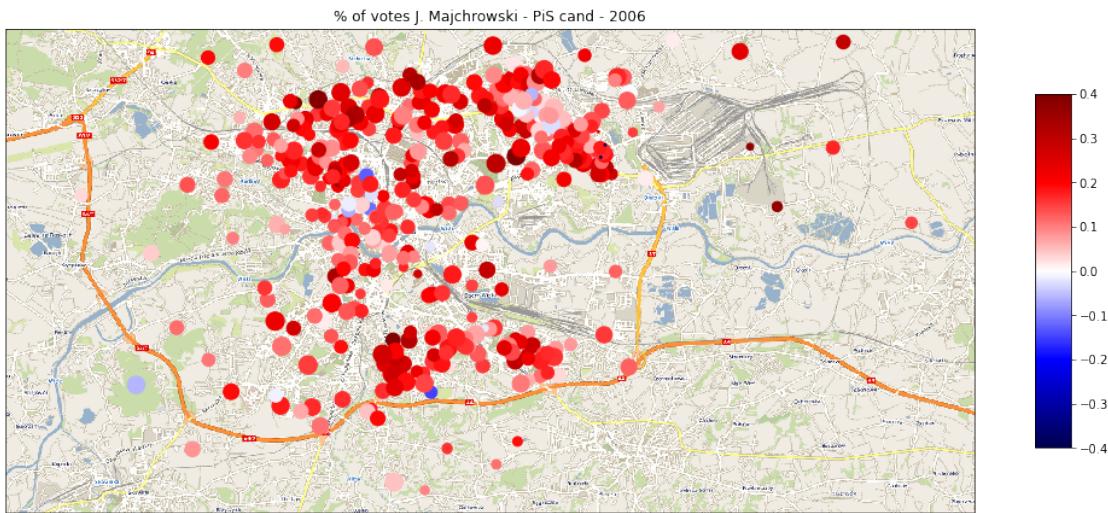
```
In [140]: plot_proc_compare(df_res_pres2006,'pis_proc','po_proc', '% of votes pis cand - po can
```



```
In [141]: plot_proc_compare(df_res_pres2006,'majchrowski_proc','po_proc', '% of votes J. Majchrzak - po can
```



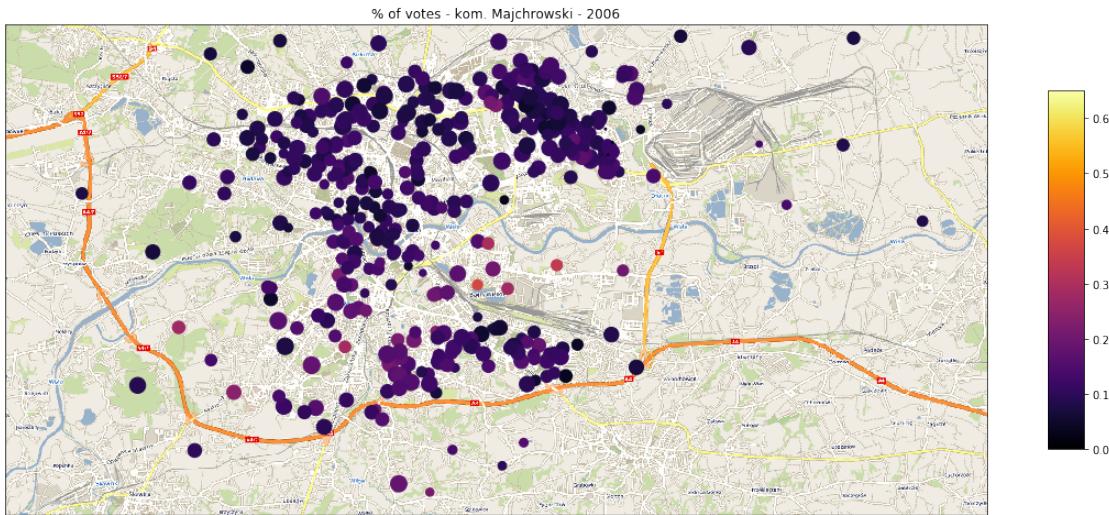
```
In [142]: plot_proc_compare(df_res_pres2006, 'majchrowski_proc', 'pis_proc', '% of votes J. Majchrowski - PiS cand - 2006')
```



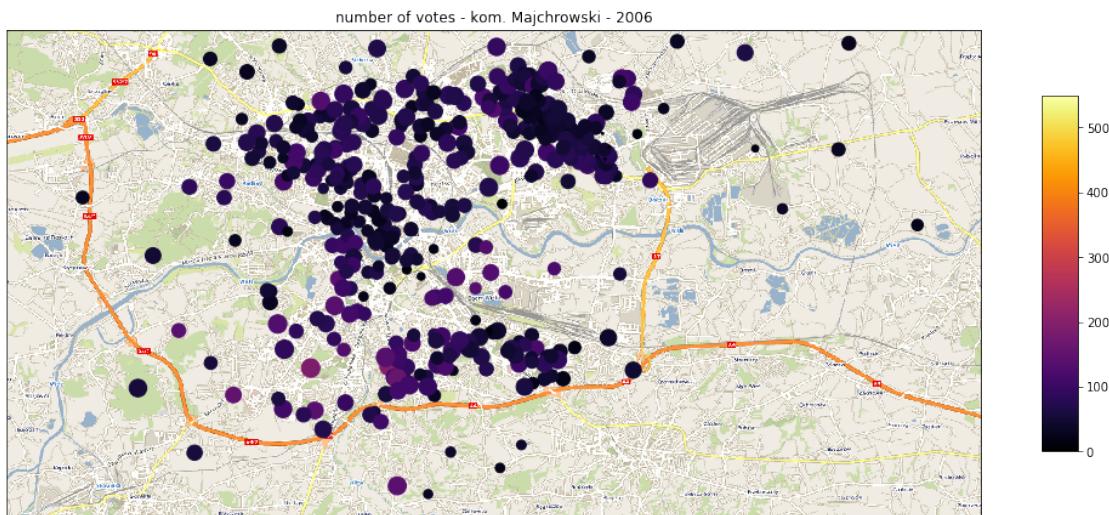
1. Poparcie dla Jacka Majchrowskiego było wysokie w części Krakowie, największy procent głosów Majchrowski otrzymało na południu i północy (Prądnik, Kurdwanów). Najniższe w centrum miasta, Ruczaj, Nowa Huta. J. Majchrowski wygrywa z głównym rywalem niemal w każdym obwodzie. Z Kandydatem PiS przegrywa tylko w niektórych miejscach NH, Starego Miastoa oraz w Tycu. Z Kandydatem PO na Ruczaju (zdecydowana wygrana kandydata PO), Kliny, Podgórkach tynieckie, Wola Justowska
2. Kandydat PiS największe poparcie otrzyma w N. Hucie oraz w centrum miasta
3. Kandydat PO najwyższe poparcie miało w pd-zach. części miasta (Ruczaj) oraz w pn-zach (Bronowice-Radzikowskiego)
4. Kandydat PiS z kandydatem PO wygrywa przede wszystkim w Nowej Hucie, poza tym w Centrum, na obrzeżach miasta z wyjątkiem czi pn. zach.

## wybory do rady miasta

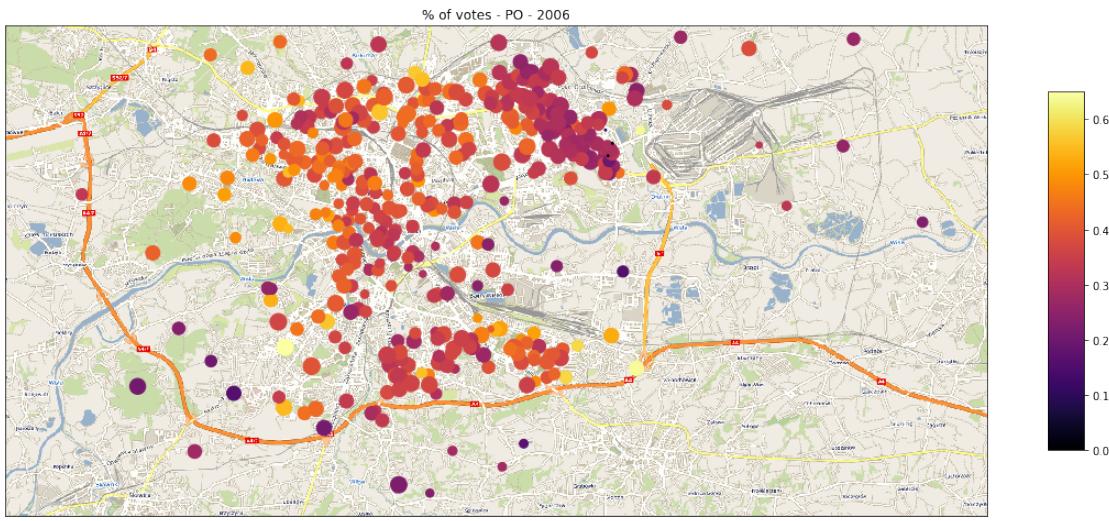
In [143]: `plot_proc(df_res_rada2006, "majchrowski_proc", "% of votes - kom. Majchrowski - 2006")`



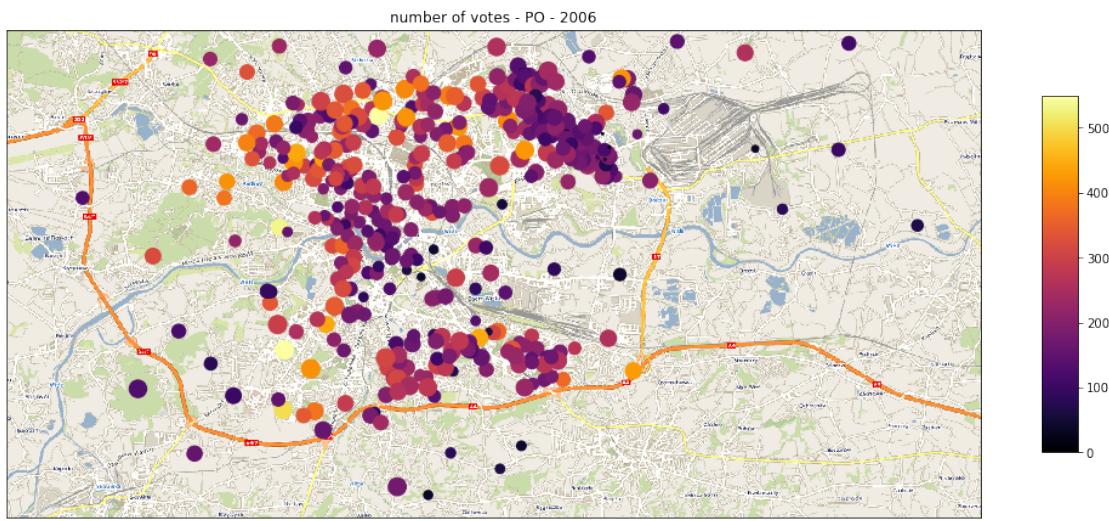
In [144]: `plot_votes(df_res_rada2006, "majchrowski", "number of votes - kom. Majchrowski - 2006")`



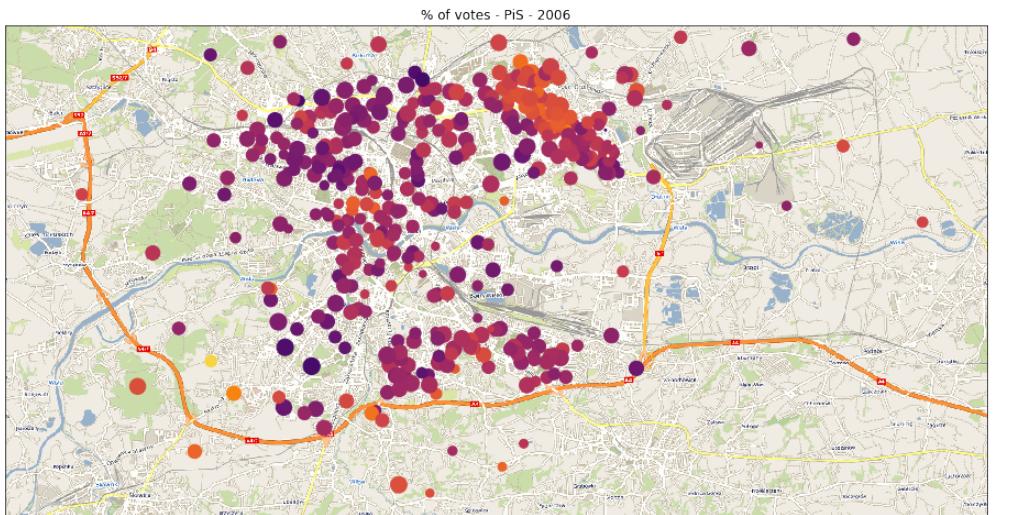
In [145]: `plot_proc(df_res_rada2006, "po_proc", "% of votes - PO - 2006")`



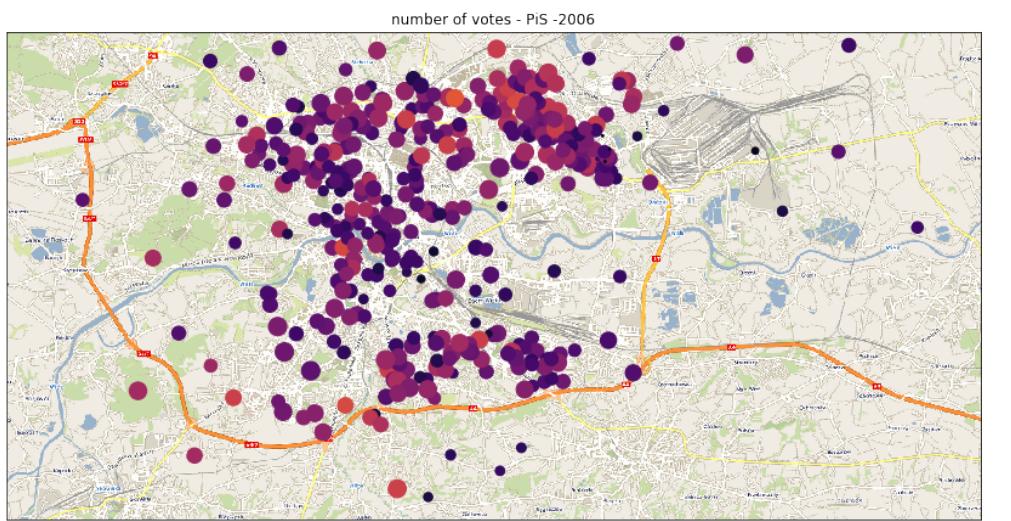
```
In [146]: plot_votes(df_res_rada2006,"po", "number of votes - PO - 2006")
```



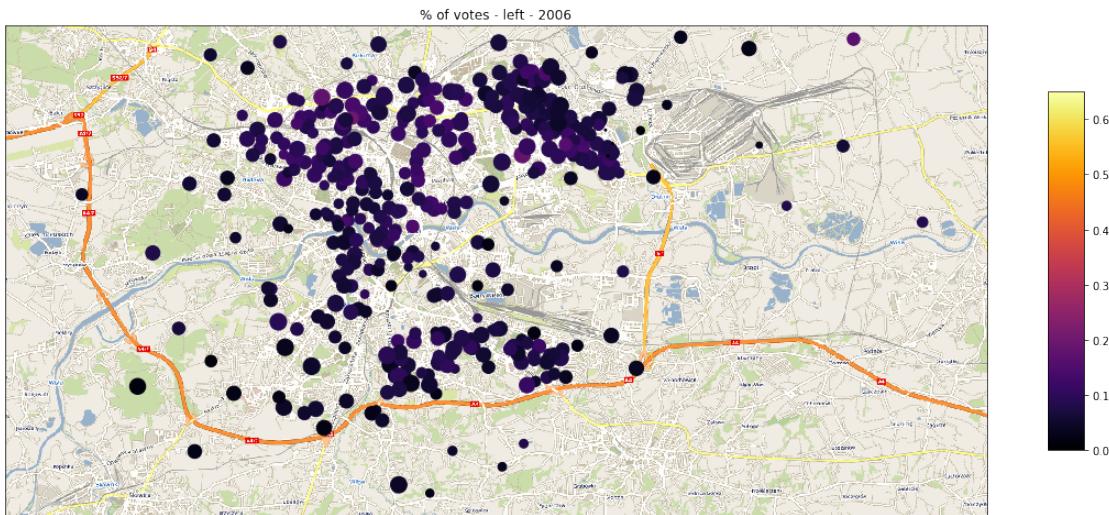
```
In [147]: plot_proc(df_res_rada2006,"pis_proc", "% of votes - PiS - 2006")
```



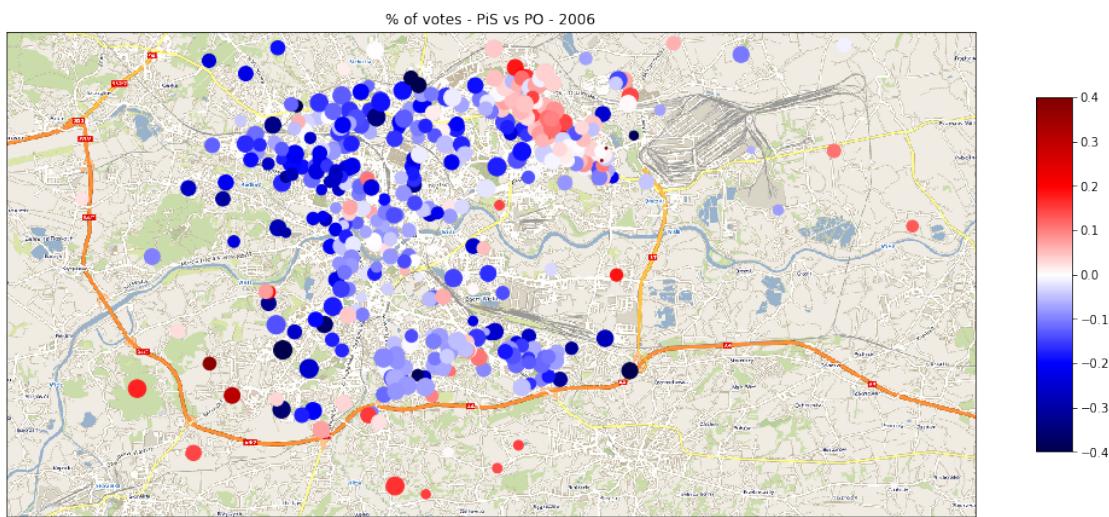
```
In [148]: plot_votes(df_res_rada2006,"pis", "number of votes - PiS -2006")
```



```
In [149]: plot_proc(df_res_rada2006,"lewica_proc", "% of votes - left - 2006")
```

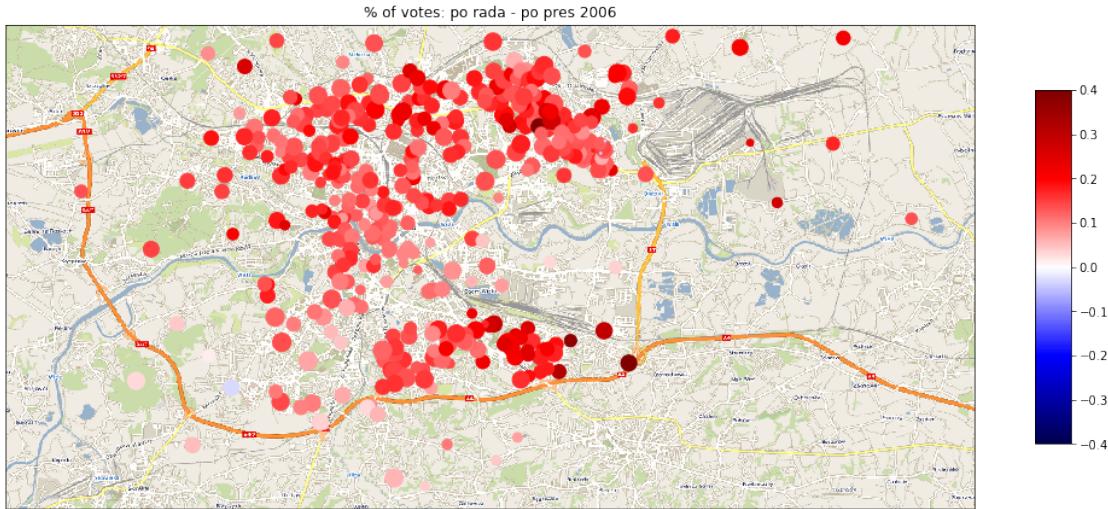


```
In [150]: plot_proc_compare(df_res_rada2006,"pis_proc","po_proc","% of votes - PiS vs PO - 2006")
```



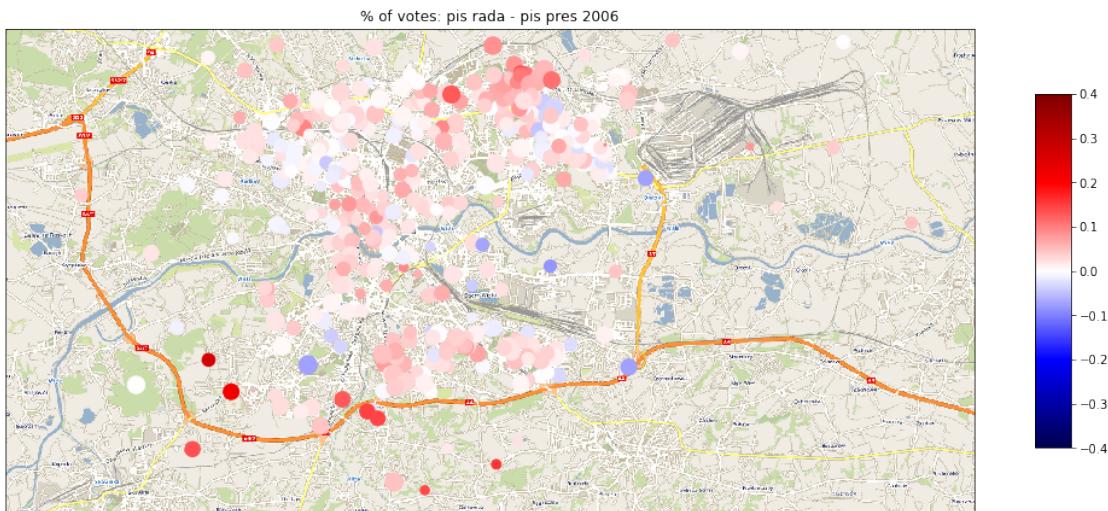
```
In [151]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2006['lon'].tolist(), df_res_rada2006['lat'].tolist(),s=df_res_rada2006['vot_left'])
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of votes: po rada - po pres 2006")
```

```
Out[151]: <matplotlib.text.Text at 0x1289e3c8>
```



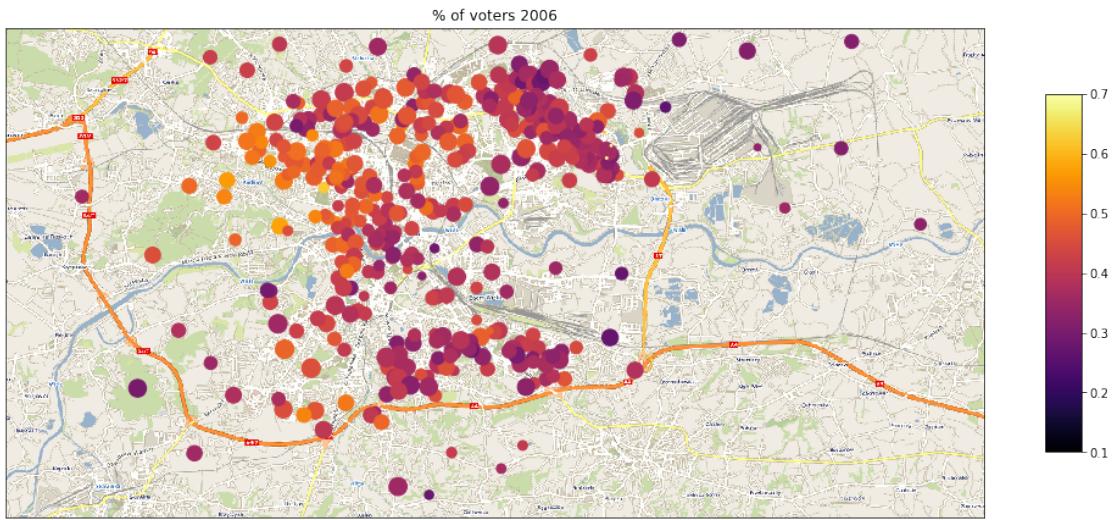
```
In [152]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2006['lon'].tolist(), df_res_rada2006['lat'].tolist(), s=10)
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of votes: pis rada - pis pres 2006")
```

Out [152]: <matplotlib.text.Text at 0xce8d940>



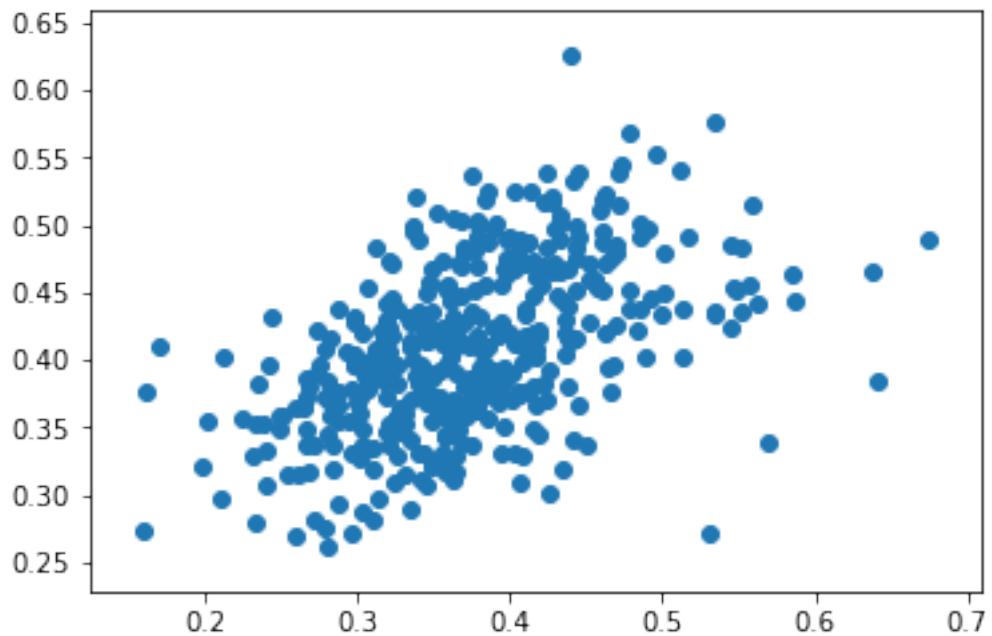
```
In [153]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2006['lon'].tolist(), df_res_rada2006['lat'].tolist(), s=10)
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters 2006")
```

```
Out[153]: <matplotlib.text.Text at 0xccca59e8>
```



```
In [156]: plt.scatter(df_res_rada2006[:412]["po_proc"],df_res_rada2006[:412]['votes']/df_res_rada2006[:412].sum('votes'))
```

```
Out[156]: <matplotlib.collections.PathCollection at 0xcf117f0>
```

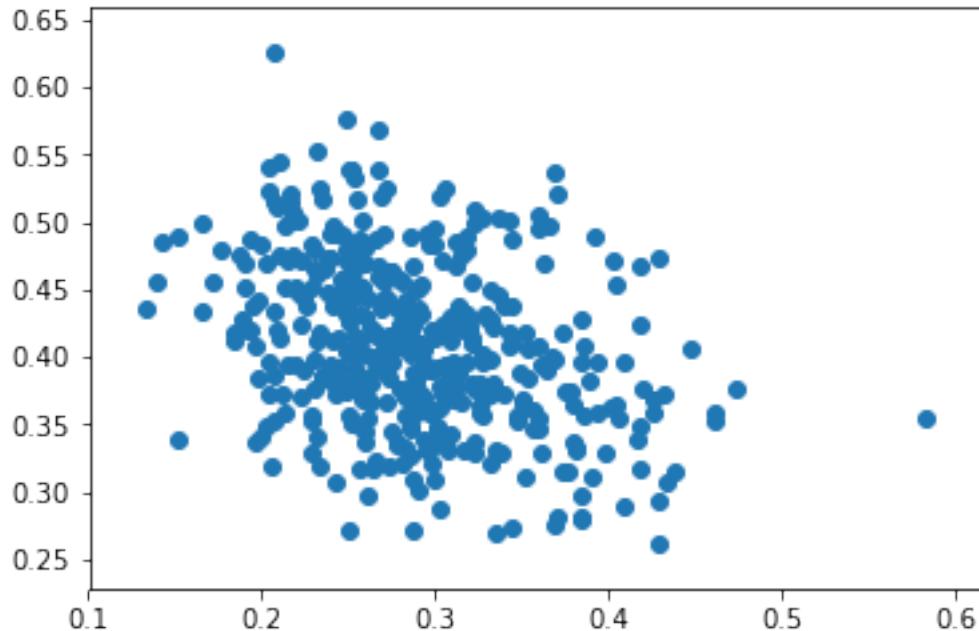


```
In [159]: scipy.stats.pearsonr(df_res_rada2006[:411]["po_proc"],df_res_rada2006[:411]['votes']/df_res_rada2006[:411].sum('votes'))
```

```
Out[159]: (0.50644427270597847, 3.6891394311408852e-28)
```

```
In [161]: plt.scatter(df_res_rada2006[:412]["pis_proc"], df_res_rada2006[:412]['votes']/df_res_rada2006[:412].sum('votes'))
```

```
Out[161]: <matplotlib.collections.PathCollection at 0x1180f908>
```



```
In [160]: scipy.stats.pearsonr(df_res_rada2006[:412]["pis_proc"], df_res_rada2006[:412]['votes']/df_res_rada2006[:412].sum('votes'))
```

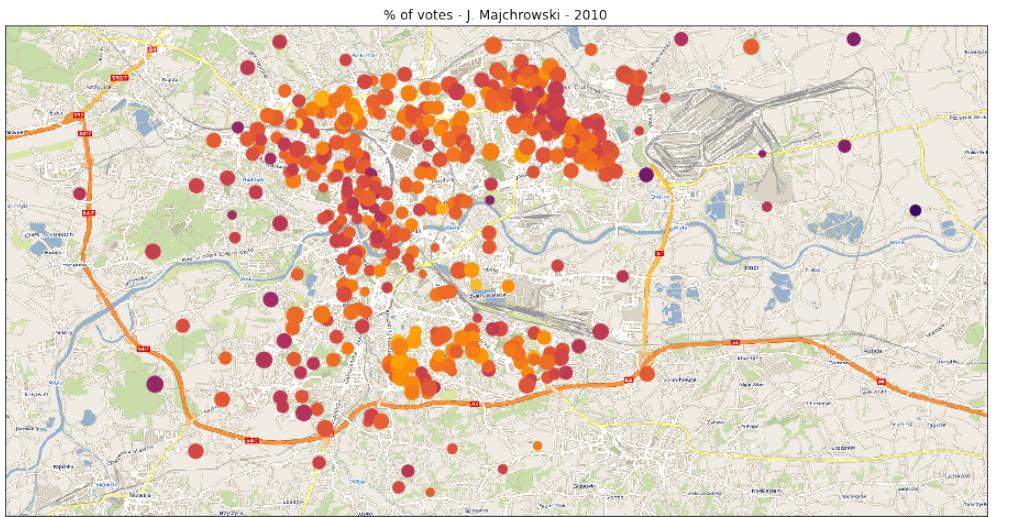
```
Out[160]: (-0.34058097218624811, 1.1982487763259566e-12)
```

1. Poparcie dla PO jest ogólnie większe na zachodzie miasta. W szczególności Ruczaj, Bronowice, ale także np. rodzinna cz. abiniec, Góra Narodowa. natomiast niskie w Nowej Hucie, Starym Mieście.
2. PiS najwyższe poparcie ma Nowej Hucie oraz Starym Mieście atakując obrzeża miasta z wyjątkiem Bronowic.
3. Po wygrywa z PiS niemal w całym mieście - wyjątek to najlepsze tereny dla PiS patrz pkt 2.
4. Istnieje korelacja między frekwencją a wynikami PO i PiS. generalnie wysoka frekwencja jest obwodach sprzyjających PO.

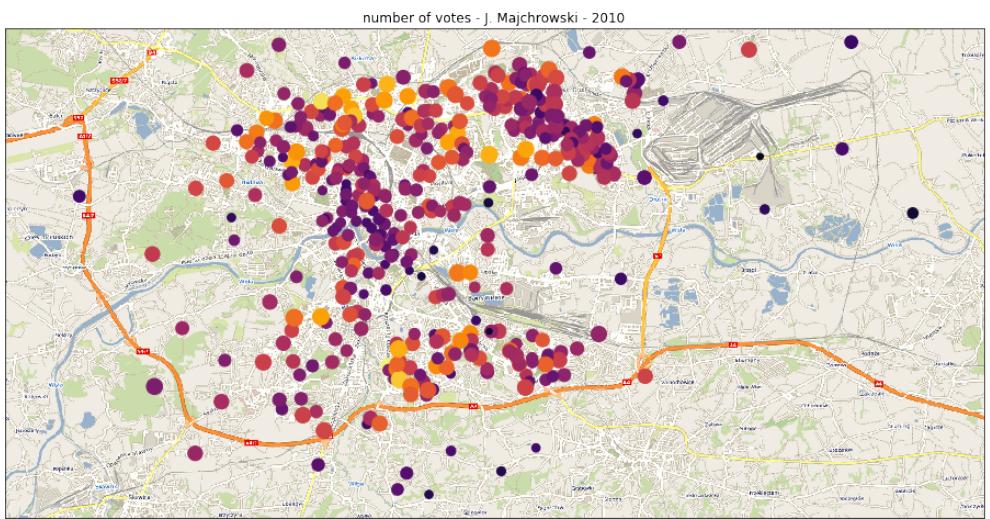
### 1.1.2 rok 2010

#### wybory prezydenckie

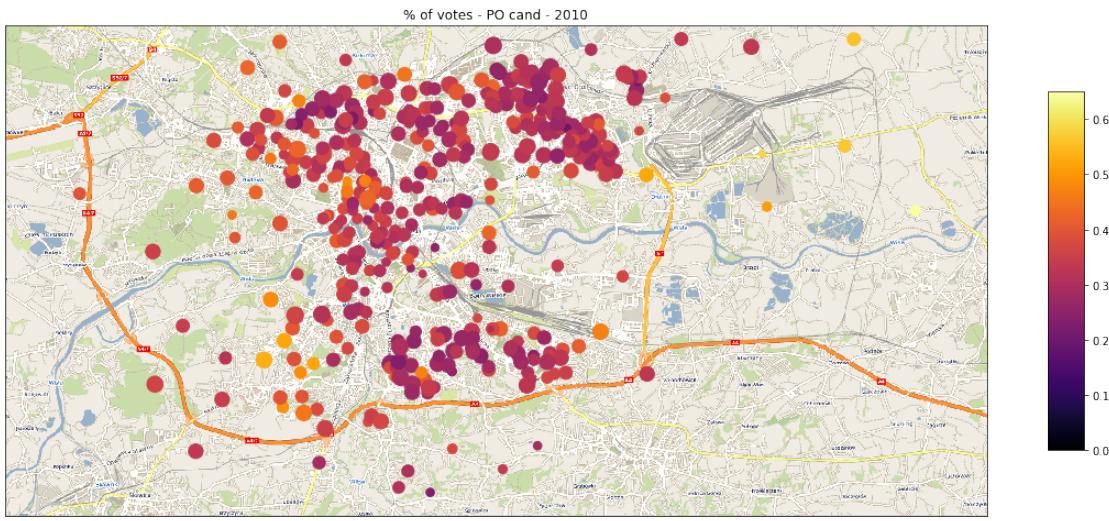
```
In [6]: plot_proc(df_res_pres2010, "majchrowski_proc", "% of votes - J. Majchrowski - 2010")
```



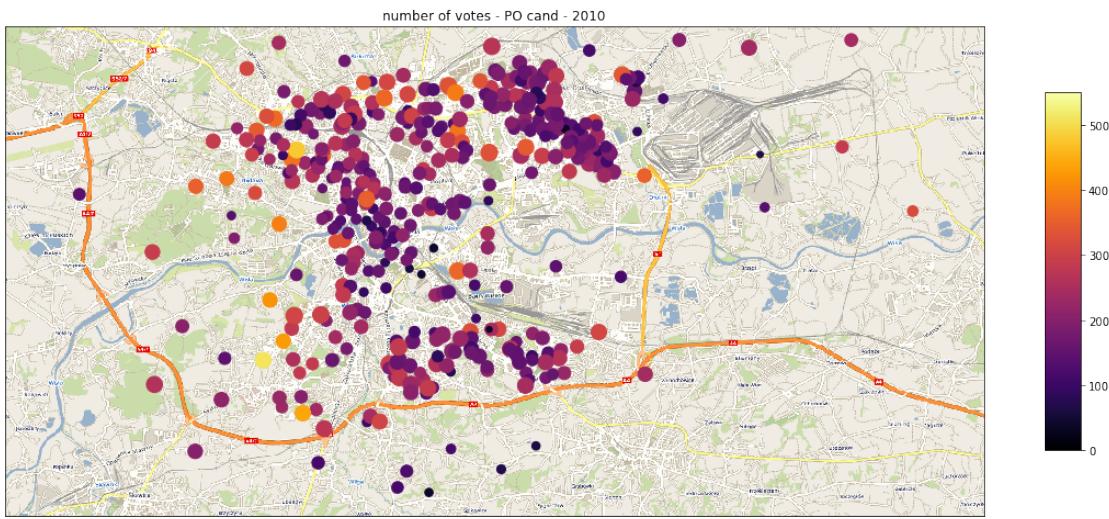
```
In [7]: plot_votes(df_res_pres2010,"majchrowski", "number of votes - J. Majchrowski - 2010")
```



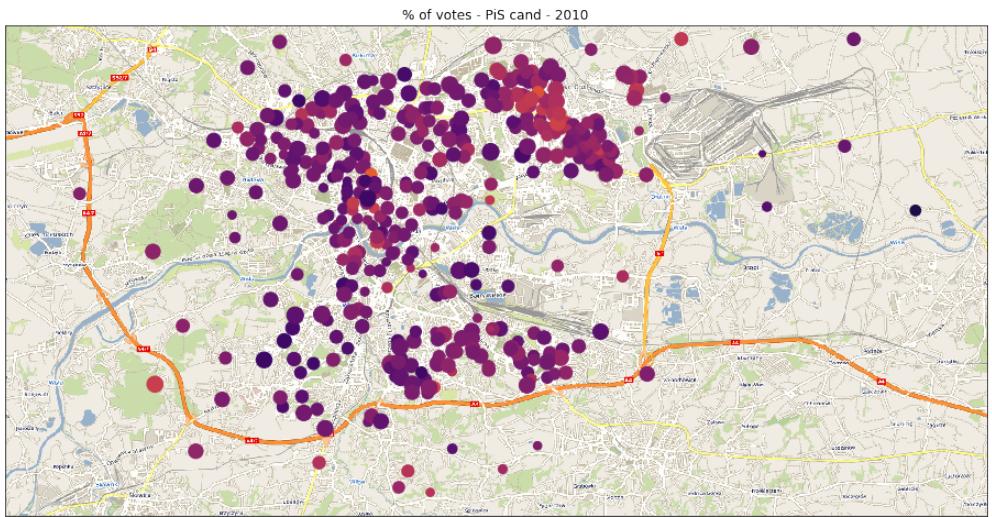
```
In [8]: plot_proc(df_res_pres2010,"po_proc", "% of votes - PO cand - 2010")
```



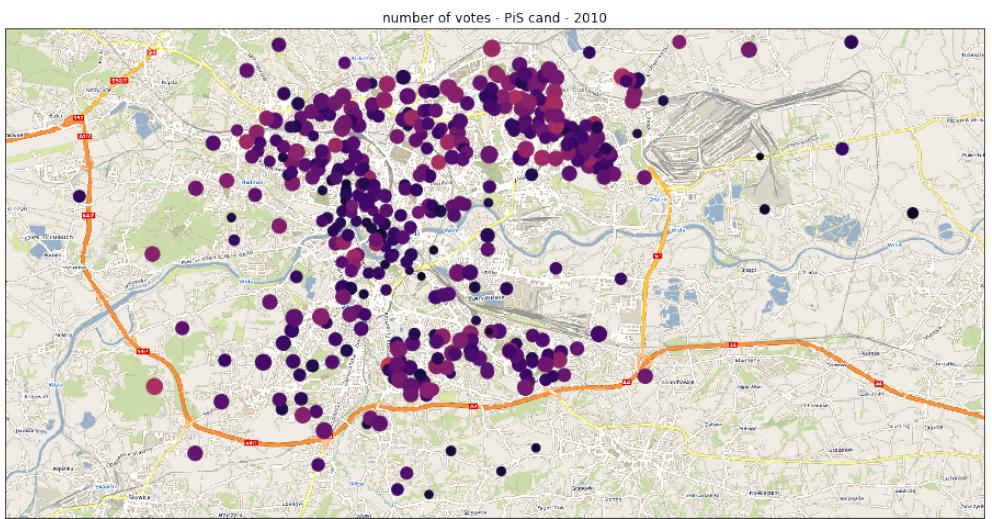
```
In [9]: plot_votes(df_res_pres2010,"po", "number of votes - PO cand - 2010")
```



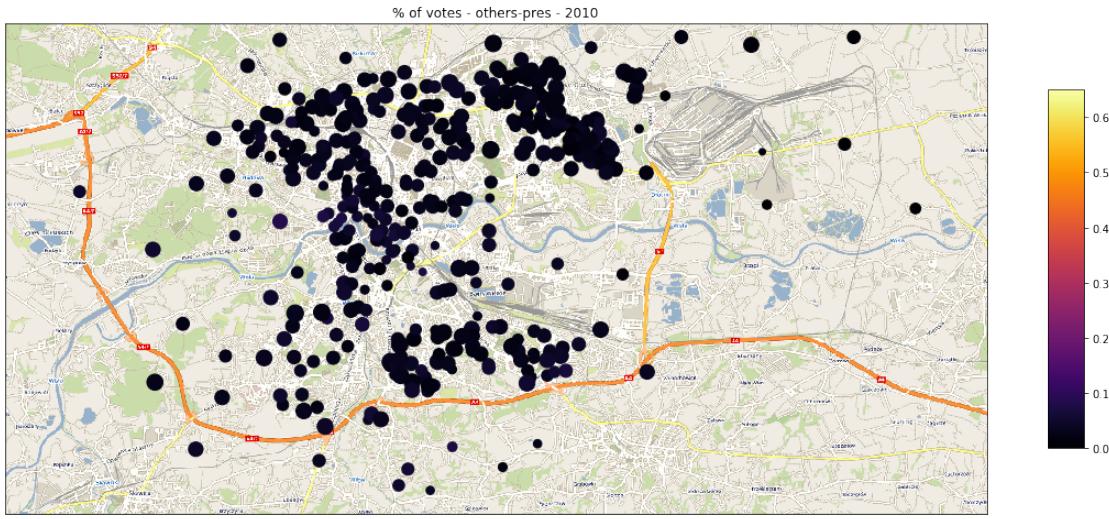
```
In [10]: plot_proc(df_res_pres2010,"pis_proc", "% of votes - PiS cand - 2010")
```



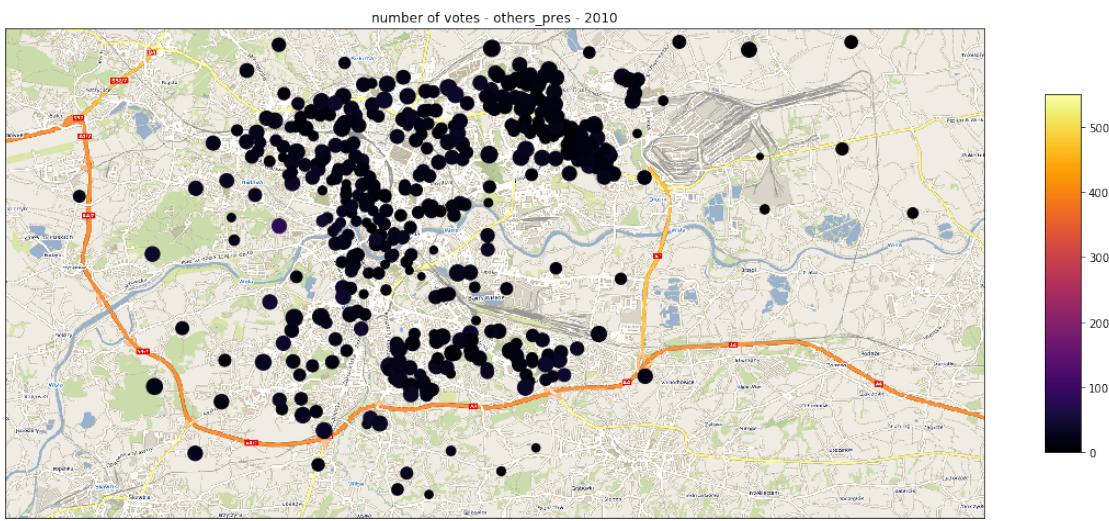
```
In [11]: plot_votes(df_res_pres2010,"pis", "number of votes - PiS cand - 2010")
```



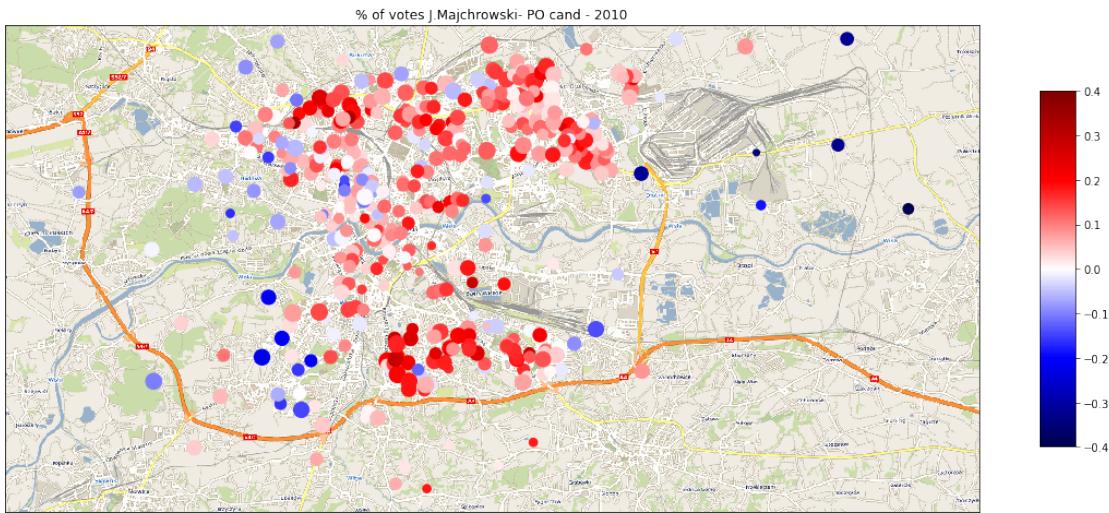
```
In [12]: plot_proc(df_res_pres2010,"inni_proc", "% of votes - others-pres - 2010")
```



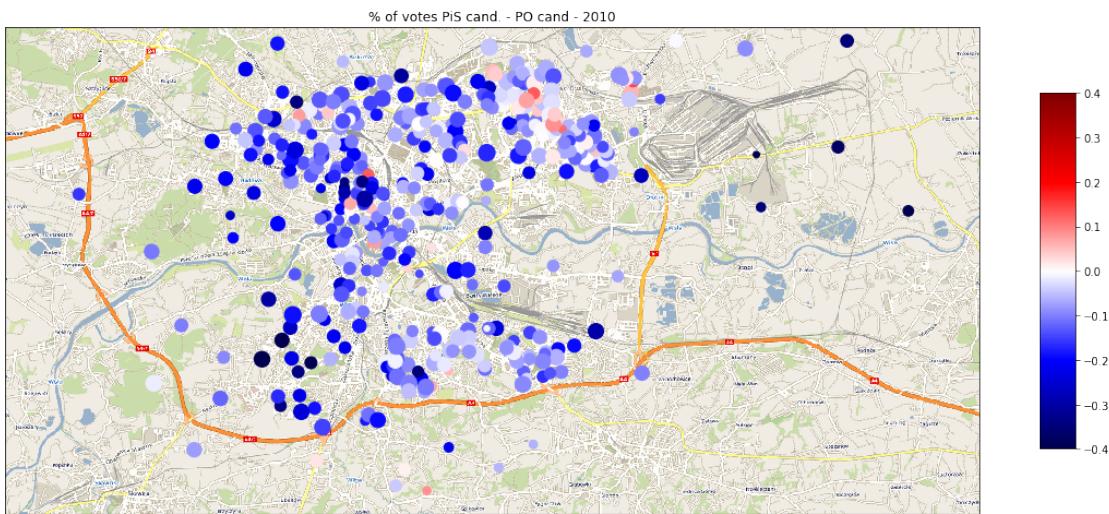
```
In [13]: plot_votes(df_res_pres2010,"inni", "number of votes - others_pres - 2010")
```



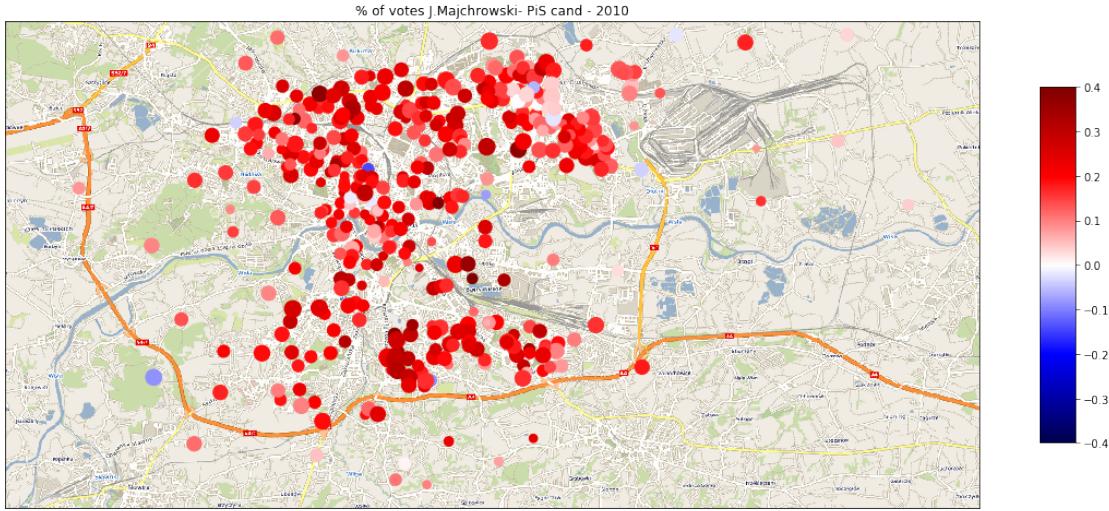
```
In [14]: plot_proc_compare(df_res_pres2010,"majchrowski_proc","po_proc","% of votes J.Majchrowski vs PO")
```



```
In [15]: plot_proc_compare(df_res_pres2010,"pis_proc","po_proc","% of votes PiS cand. - PO cand.
```

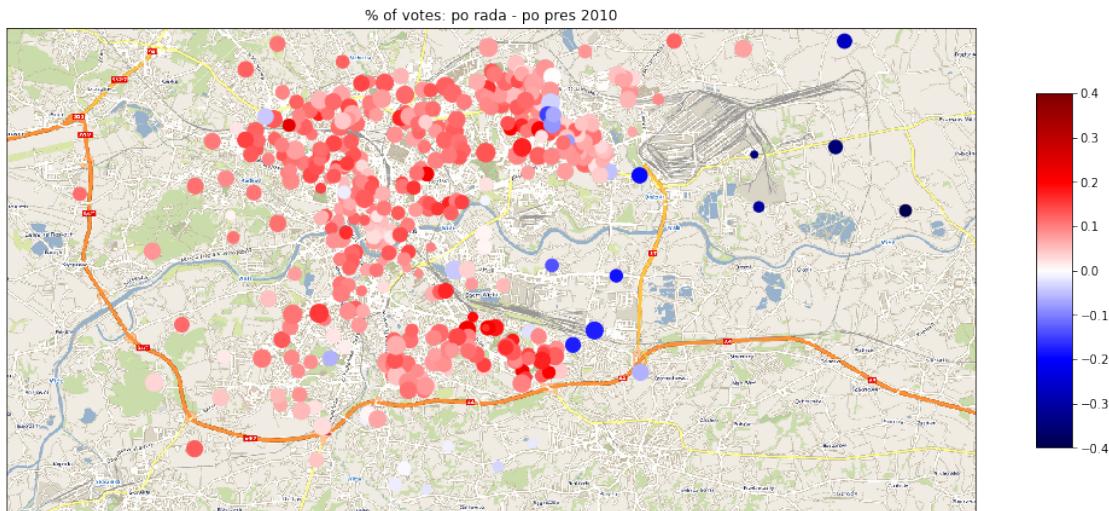


```
In [16]: plot_proc_compare(df_res_pres2010,"majchrowski_proc","pis_proc","% of votes J.Majchrowski
```



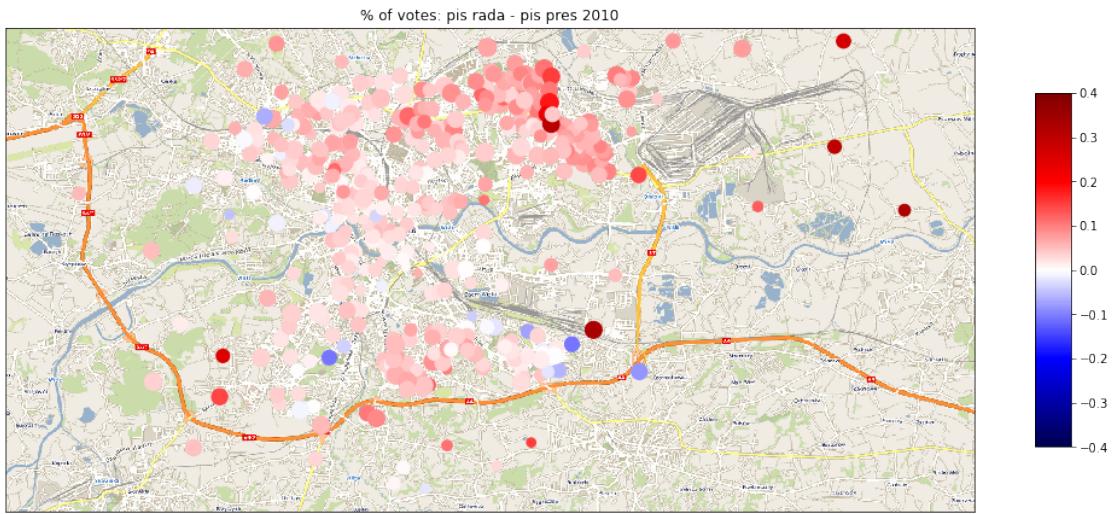
```
In [17]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2010['lon'].tolist(), df_res_rada2010['lat'].tolist(), s=df_
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of votes: po rada - po pres 2010")
```

Out[17]: <matplotlib.text.Text at 0xd2c1e10>



```
In [18]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2010['lon'].tolist(), df_res_rada2010['lat'].tolist(), s=df_
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of votes: pis rada - pis pres 2010")
```

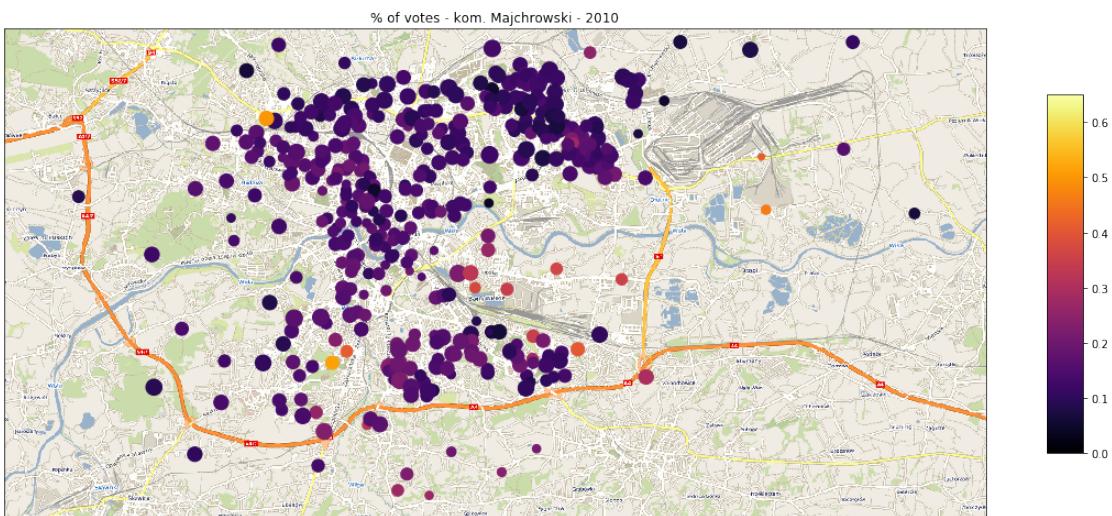
Out [18]: <matplotlib.text.Text at 0xc9e8240>



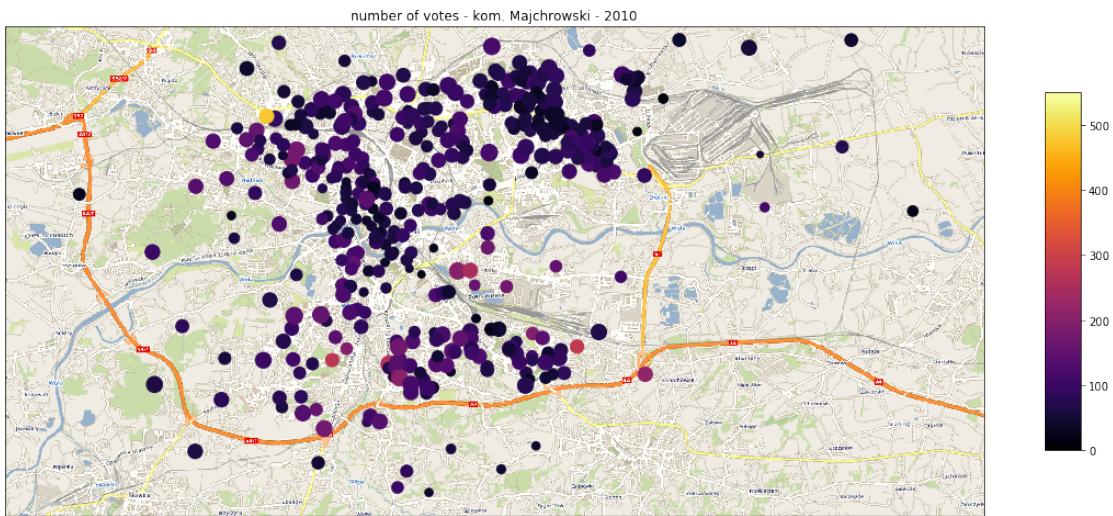
1. J. Majchrowski największe poparcie mia w pn. i pd. osiedlach oraz w Paszowicach.
2. Kandydat PO mia generalnie większe poparcie na zach. miasta w szczególności pd. zach. (Ruczaj) a także na wschodnich obrzeżach miasta i części Centrum (ok. Karmelickiej)
3. Kandydat PiS wysokie poparcie mia przede wszystkim w N. Hucie oraz w Nowej Hucie ale nawet w swoich najlepszych obwodach zwykle przegrywa z JM.

### wybory do rady miasta

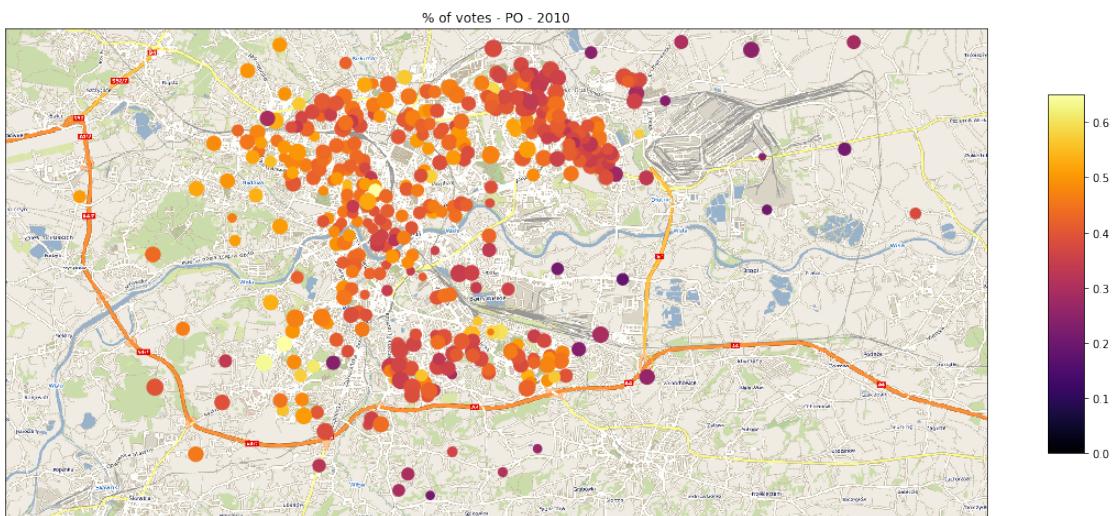
In [19]: plot\_proc(df\_res\_rada2010, "majchrowski\_proc", "% of votes - kom. Majchrowski - 2010")



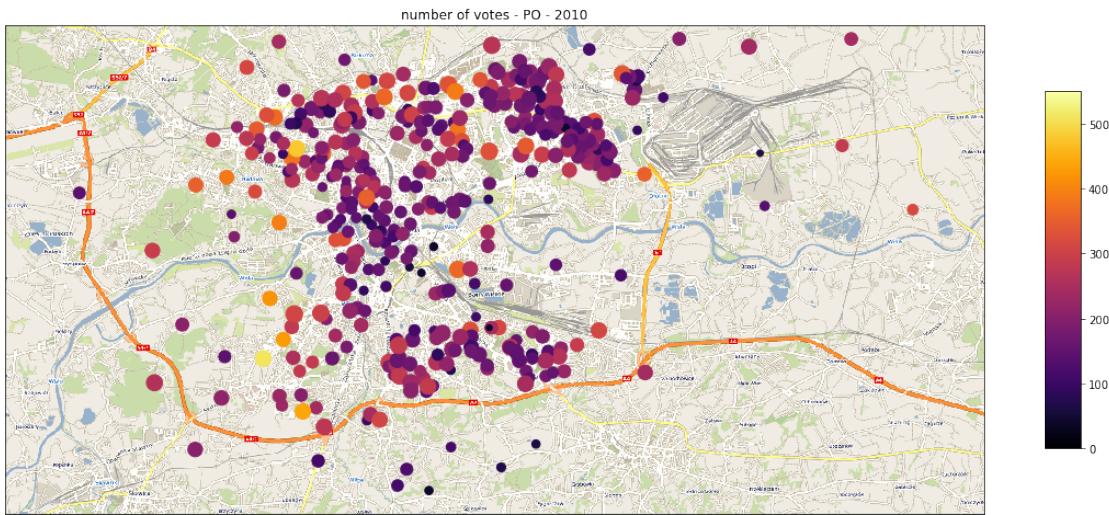
```
In [20]: plot_votes(df_res_rada2010,"majchrowski", "number of votes - kom. Majchrowski - 2010")
```



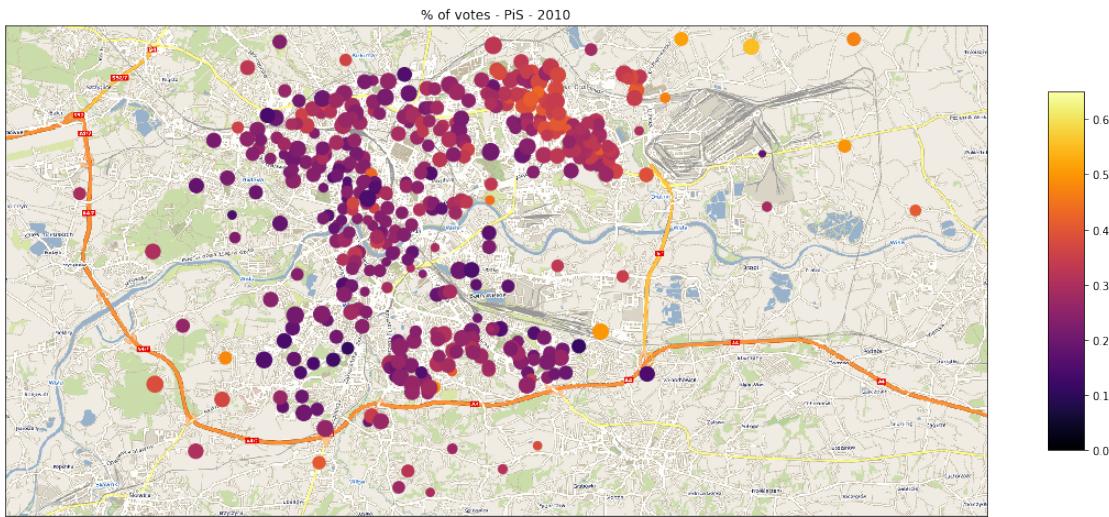
```
In [21]: plot_proc(df_res_rada2010,"po_proc", "% of votes - PO - 2010")
```



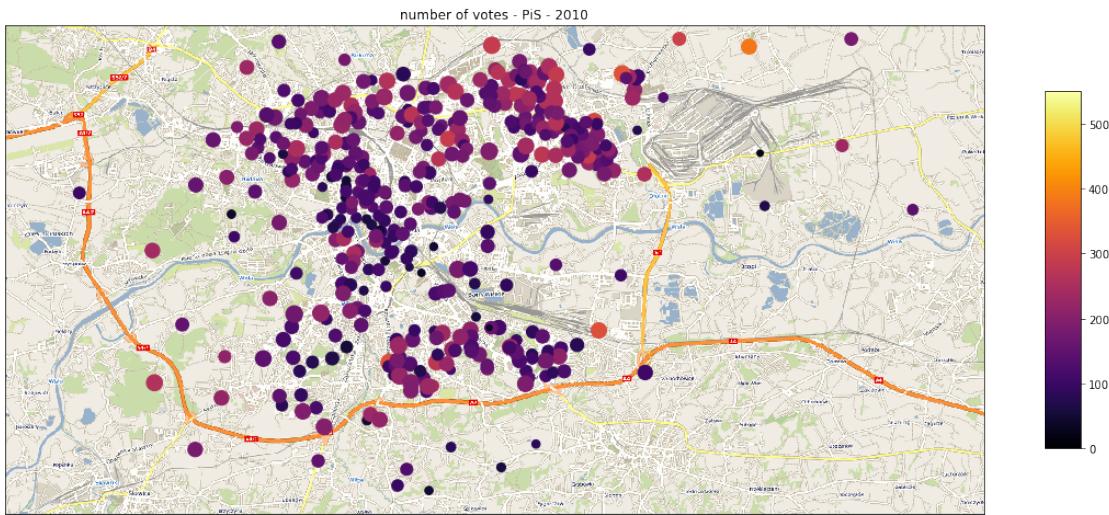
```
In [22]: plot_votes(df_res_pres2010,"po", "number of votes - PO - 2010")
```



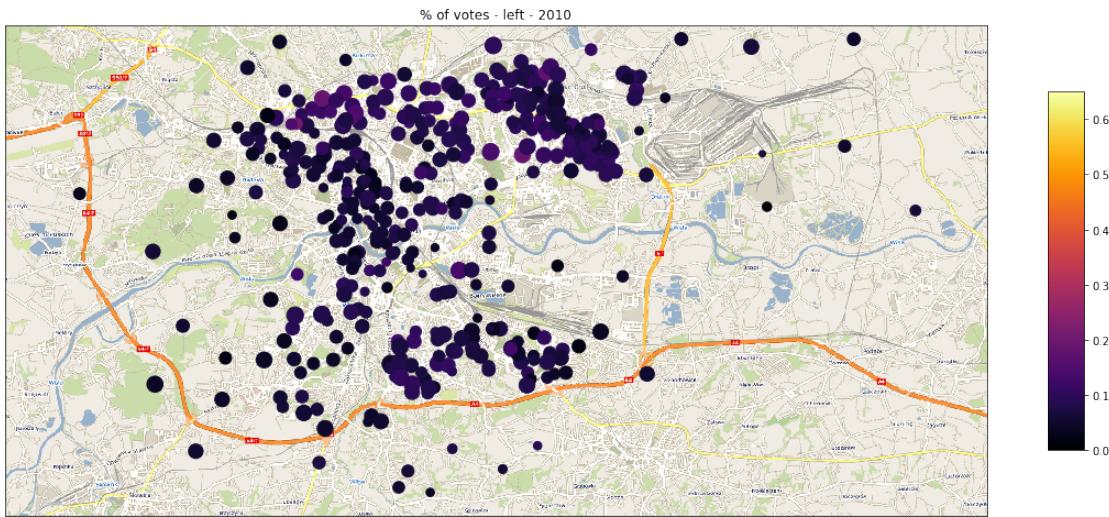
```
In [23]: plot_proc(df_res_rada2010,"pis_proc", "% of votes - PiS - 2010")
```



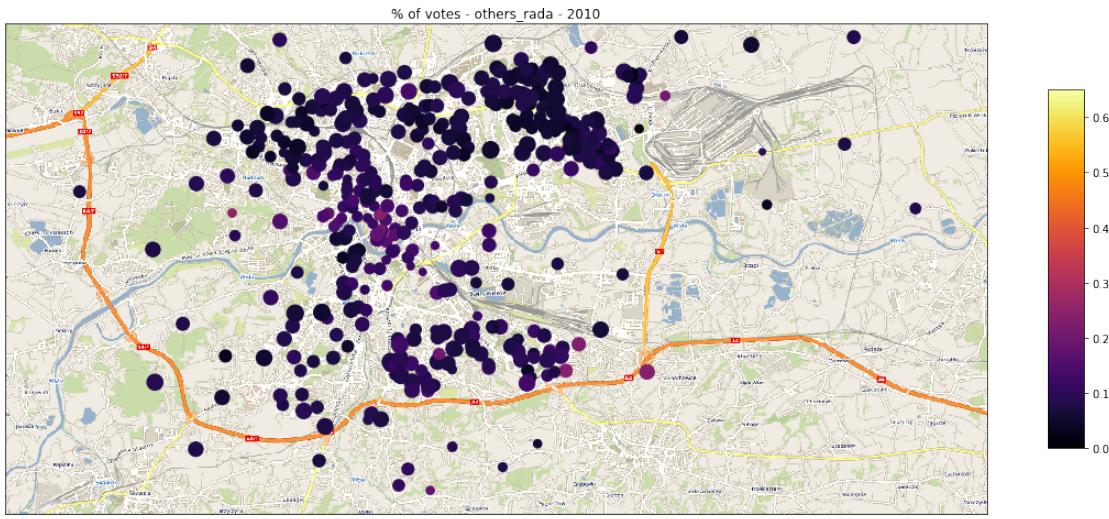
```
In [24]: plot_votes(df_res_rada2010,"pis", "number of votes - PiS - 2010")
```



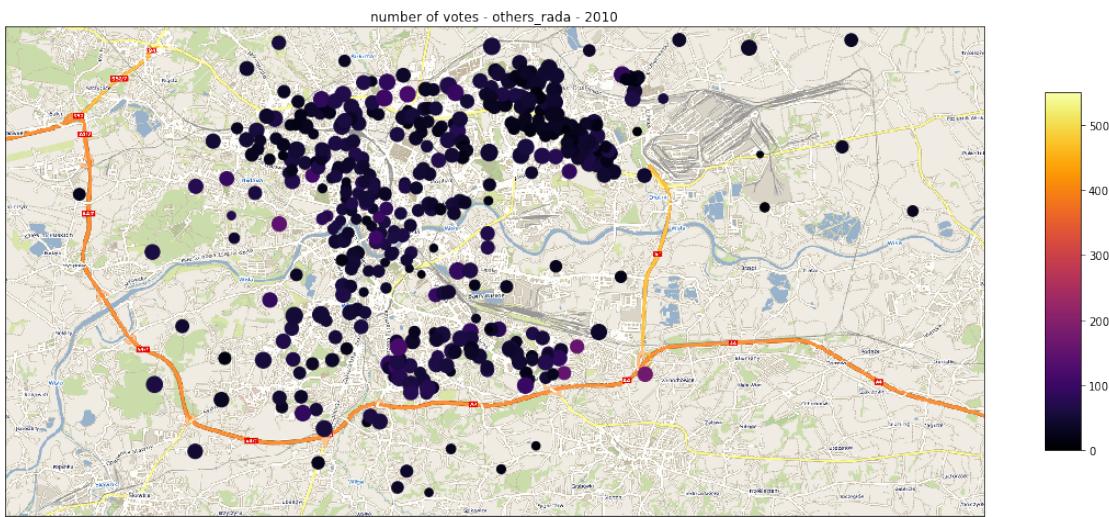
```
In [25]: plot_proc(df_res_rada2010,"lewica_proc", "% of votes - left - 2010")
```



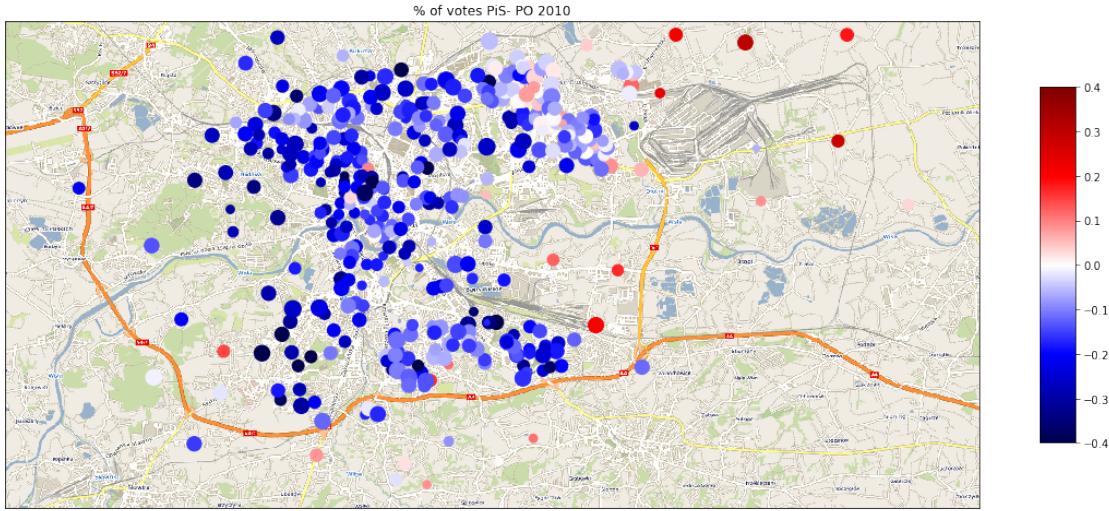
```
In [26]: plot_proc(df_res_rada2010,"inni_proc", "% of votes - others_rada - 2010")
```



```
In [27]: plot_votes(df_res_rada2010,"inni", "number of votes - others_rada - 2010")
```

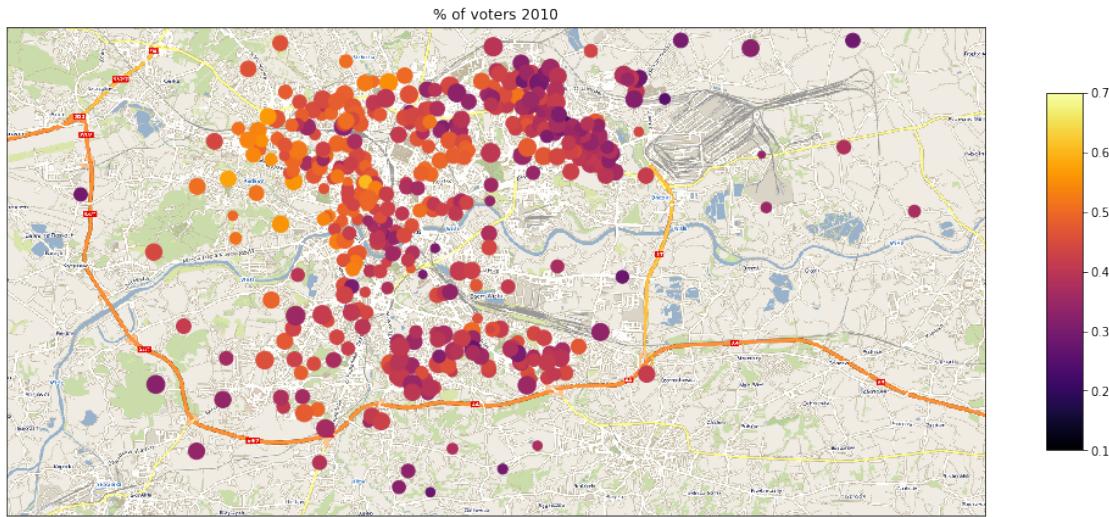


```
In [28]: plot_proc_compare(df_res_rada2010,"pis_proc","po_proc","% of votes PiS- PO 2010")
```



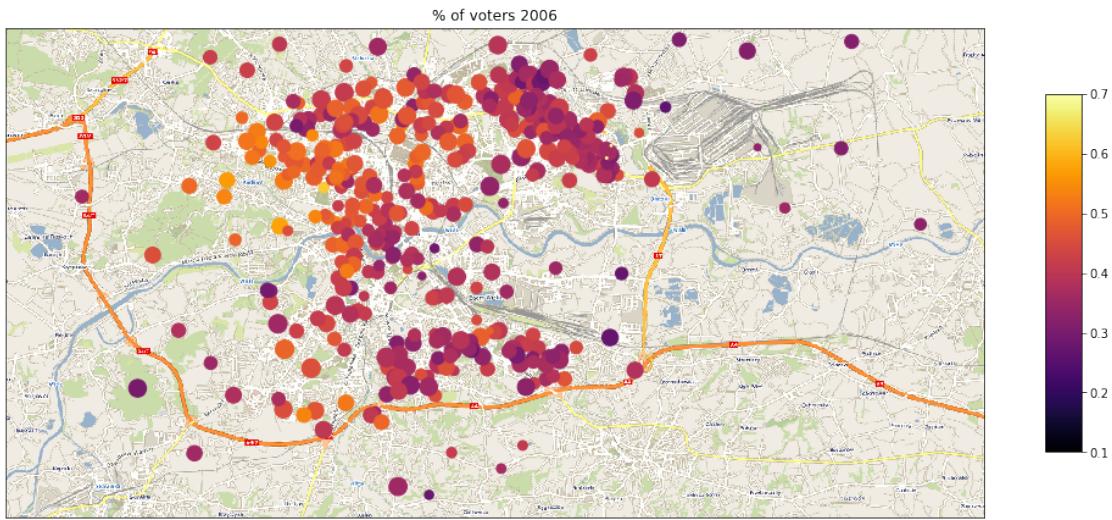
```
In [29]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2010['lon'].tolist(), df_res_rada2010['lat'].tolist(), s=df_
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters 2010")
```

Out [29]: <matplotlib.text.Text at 0xcc00588>



```
In [30]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2006['lon'].tolist(), df_res_rada2006['lat'].tolist(), s=df_
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters 2006")
```

```
Out[30]: <matplotlib.text.Text at 0xd4fd9e8>
```

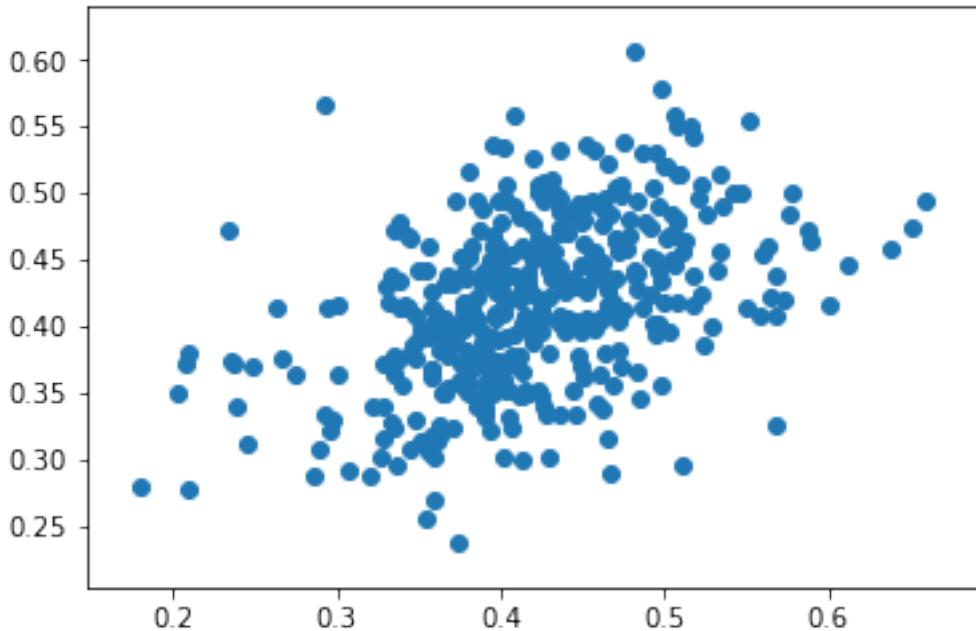


```
In [31]: scipy.stats.pearsonr(df_res_rada2010["po_proc"],df_res_rada2010['votes']/df_res_rada2010['max_v'])
```

```
Out[31]: (0.45831365147907061, 2.0770489768600848e-23)
```

```
In [32]: plt.scatter(df_res_rada2010["po_proc"],df_res_rada2010['votes']/df_res_rada2010['max_v'])
```

```
Out[32]: <matplotlib.collections.PathCollection at 0xfe759b0>
```

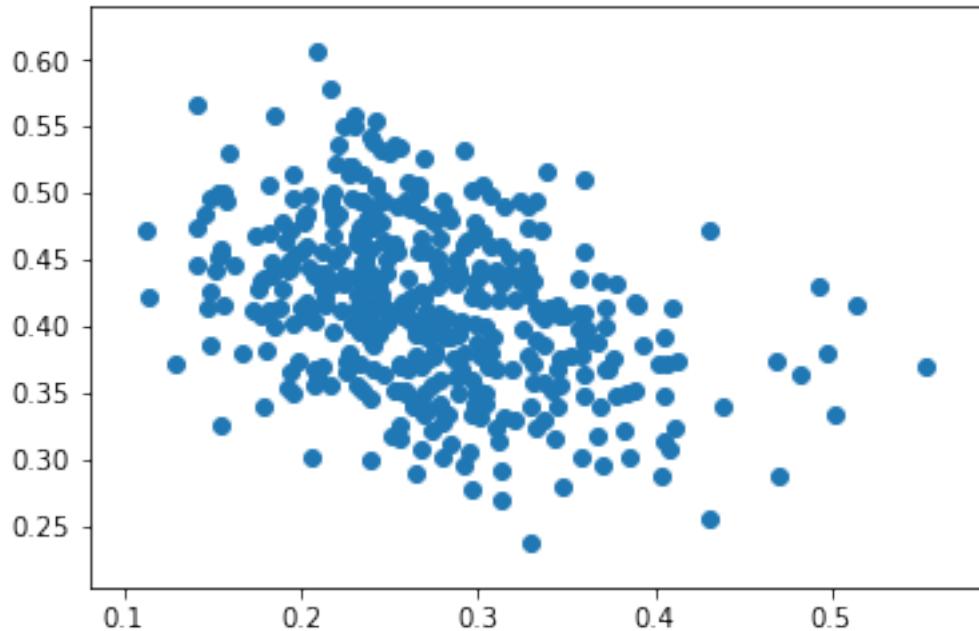


```
In [33]: scipy.stats.pearsonr(df_res_rada2010["pis_proc"],df_res_rada2010['votes']/df_res_rada2010['max'])

Out[33]: (-0.37889784357685841, 6.3572117952619445e-16)

In [34]: plt.scatter(df_res_rada2010["pis_proc"],df_res_rada2010['votes']/df_res_rada2010['max'])

Out[34]: <matplotlib.collections.PathCollection at 0xd5086a0>
```

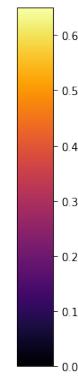
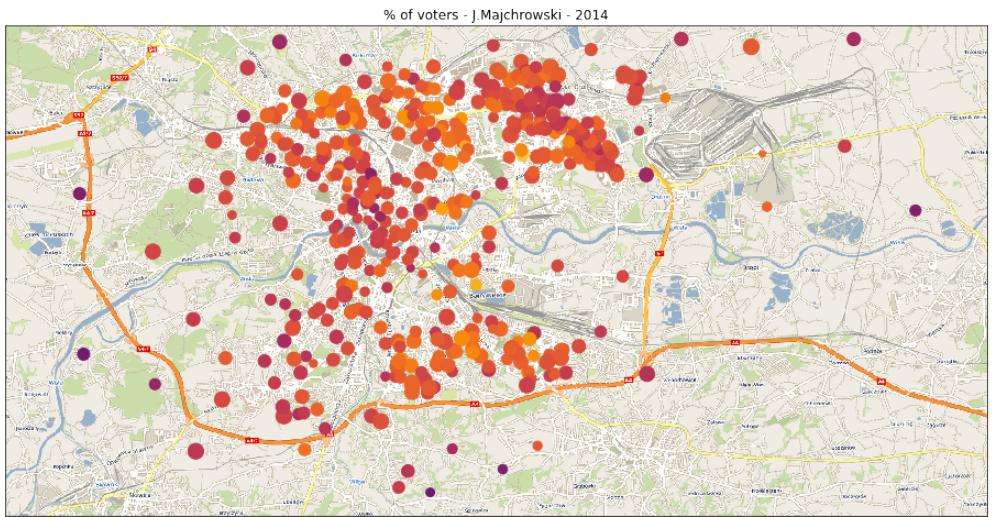


1. PO miało wysokie poparcie niemal w całym mieście (z PiS wygrało niemal w każdym obwodzie, wyjątki to niektóre miejsca w NH, a przede wszystkim wschodnie osiedla na obrzeżach NH). Najwyższe poparcie PO miało w pd. zach części miasta (Ruczaj) a także w części Bielanowa oraz Bronowic.
2. PiS najlepsze wynik miało w Nowej Hucie i wschodnich obrzeżach miasta.
3. Wynik PO i PiS wykazuje skorelowanie odpowiednio dodatnie i ujemne z frekwencją wyborczą.

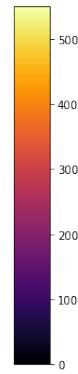
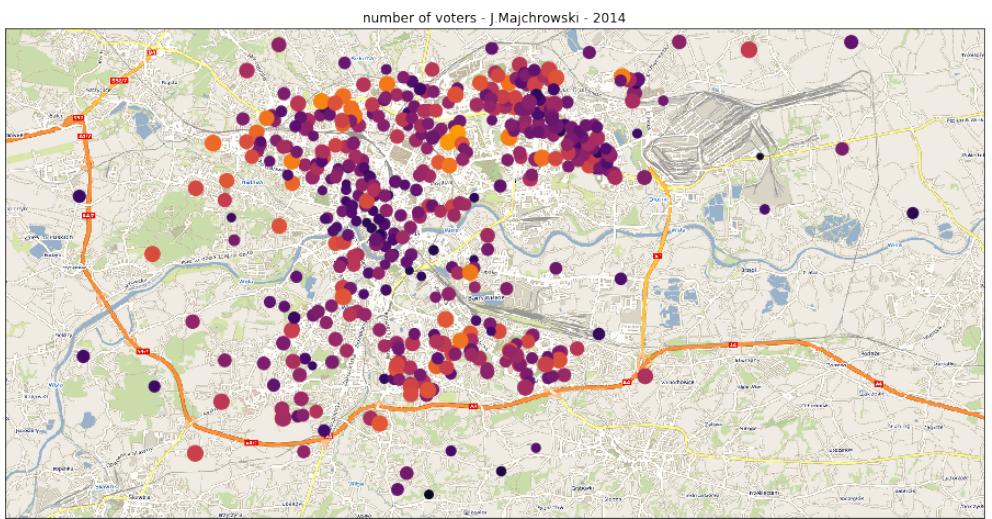
### 1.1.3 rok 2014

#### wybory prezydenckie

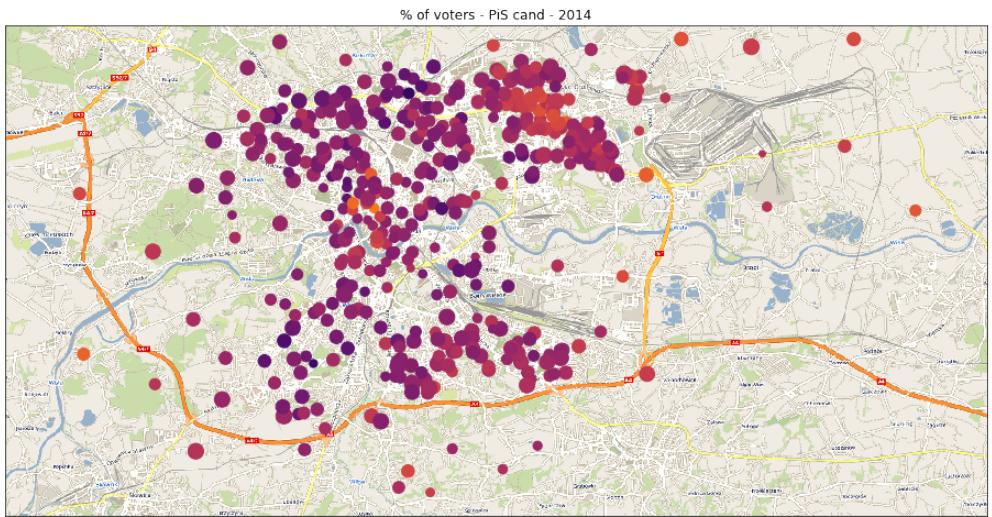
```
In [35]: plot_proc(df_res_pres2014,"majchrowski_proc","% of voters - J.Majchrowski - 2014")
```



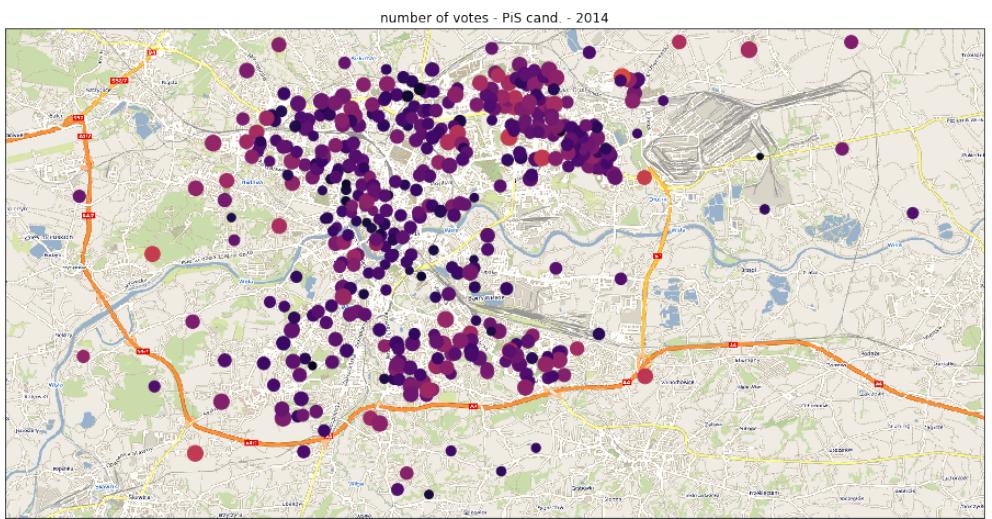
```
In [36]: plot_votes(df_res_pres2014,"majchrowski","number of voters - J.Majchrowski - 2014")
```



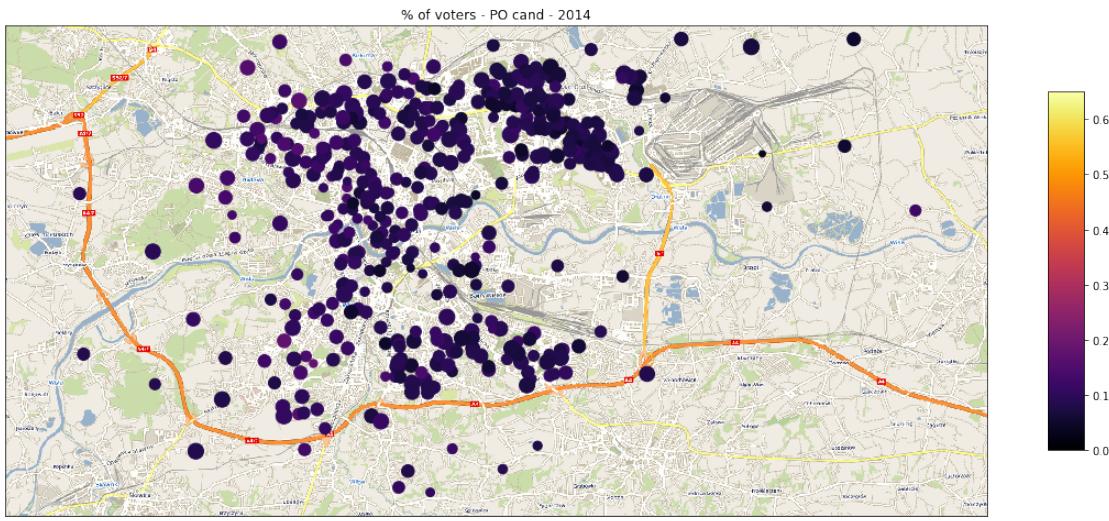
```
In [37]: plot_proc(df_res_pres2014,"pis_proc","% of voters - PiS cand - 2014")
```



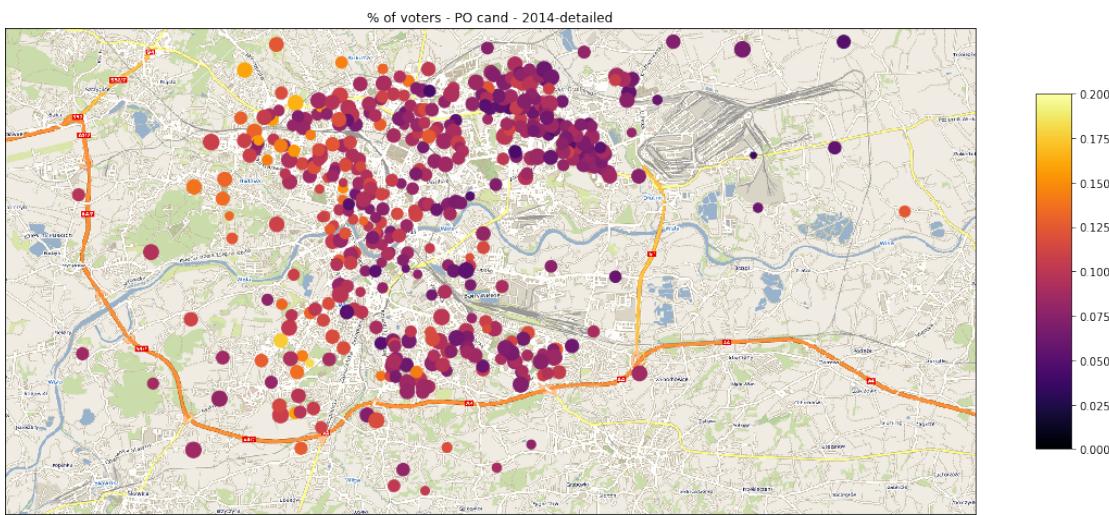
```
In [38]: plot_votes(df_res_pres2014,"pis","number of votes - PiS cand. - 2014")
```



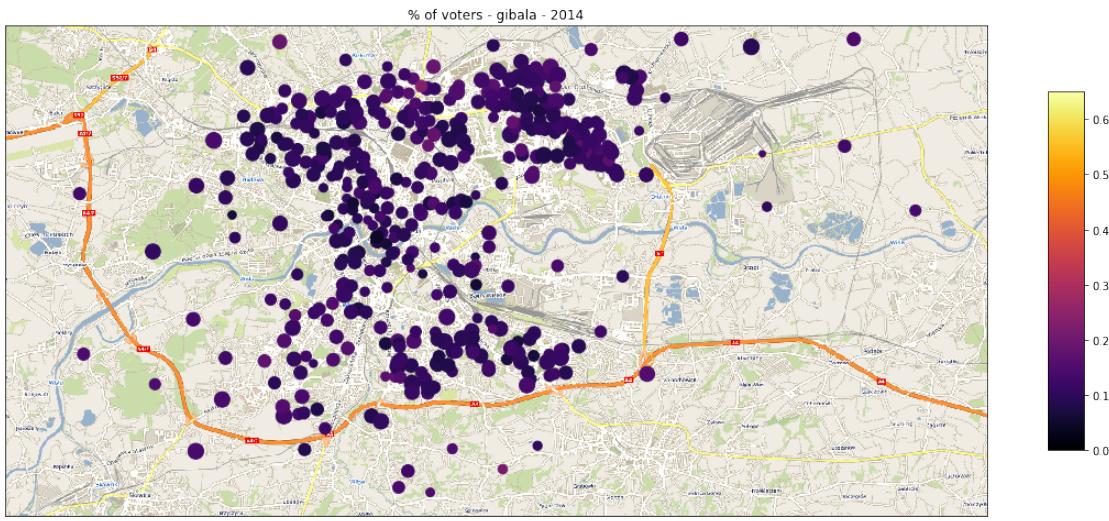
```
In [39]: plot_proc(df_res_pres2014,"po_proc","% of voters - PO cand - 2014")
```



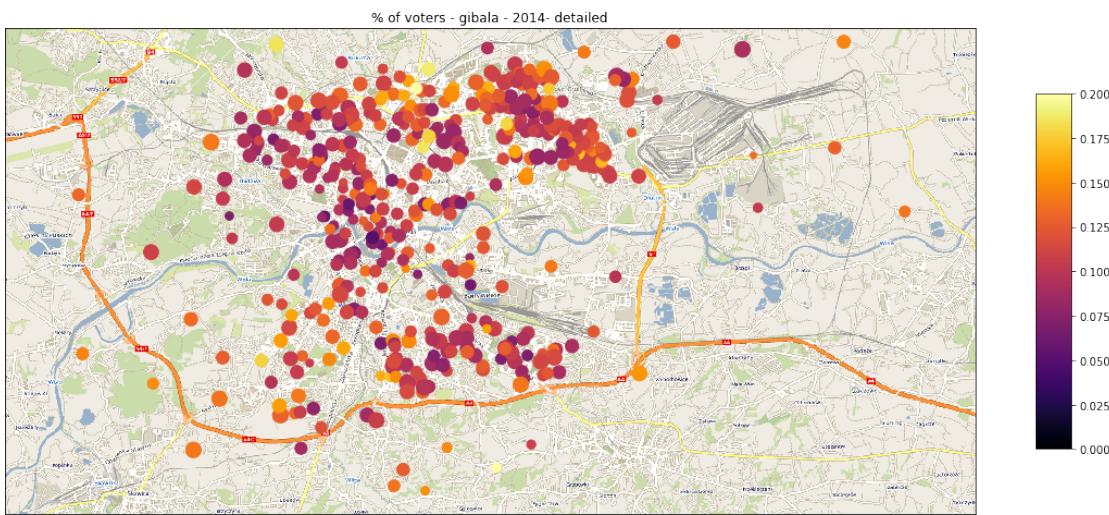
```
In [40]: plot_proc(df_res_pres2014,"po_proc","% of voters - PO cand - 2014-detailed", vmin=0.0
```



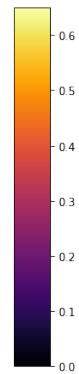
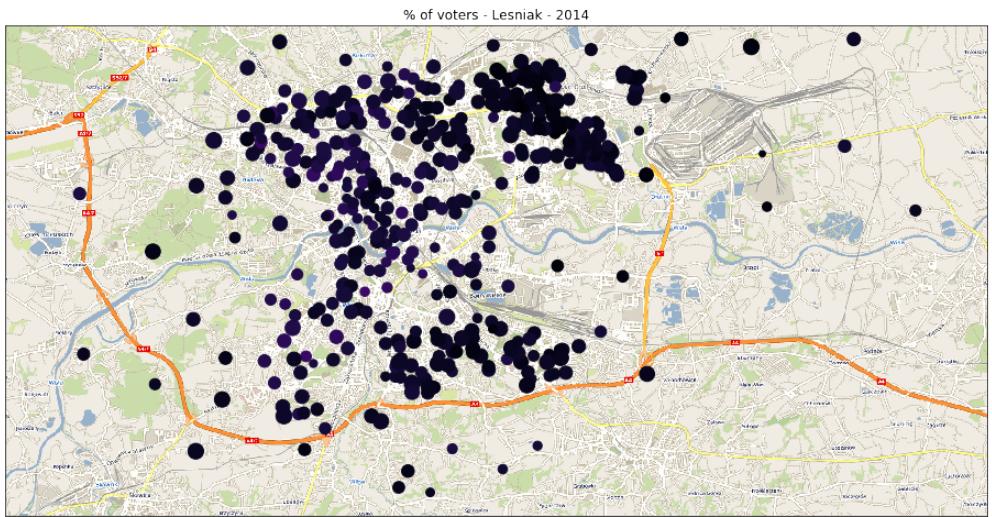
```
In [41]: plot_proc(df_res_pres2014,"gibalal_proc","% of voters - gibalal - 2014")
```



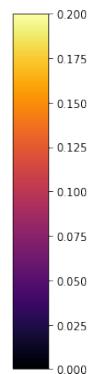
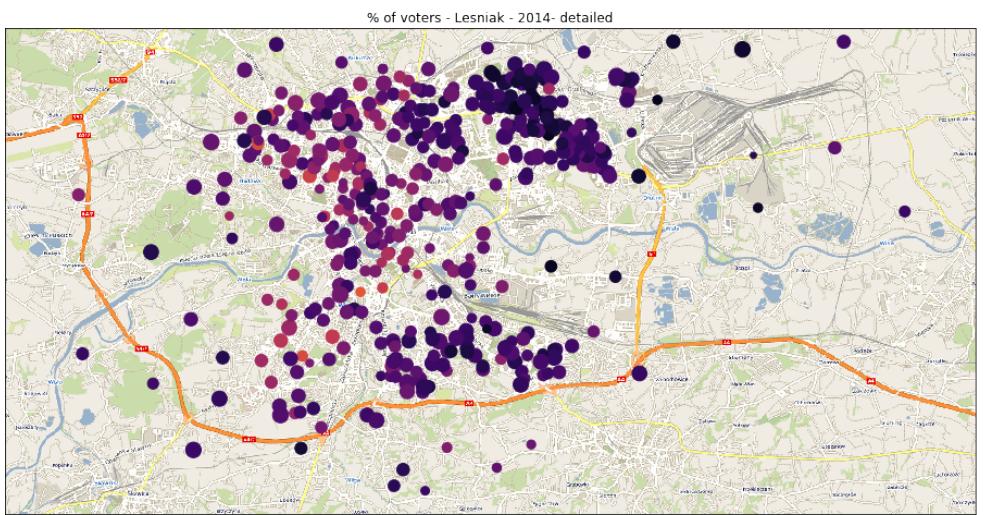
```
In [42]: plot_proc(df_res_pres2014,"gibal_proc","% of voters - gibal - 2014- detailed",vmin=0)
```



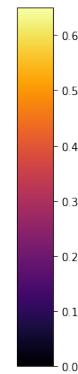
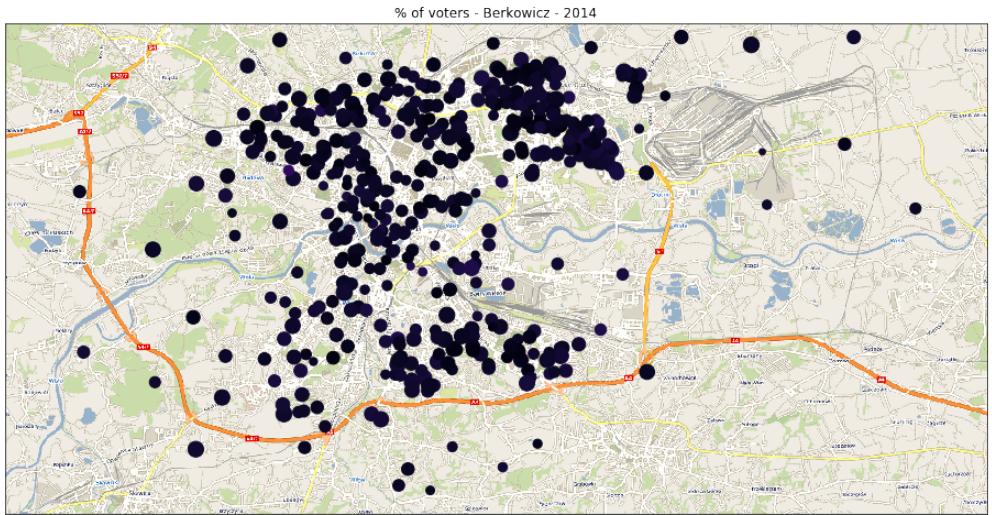
```
In [43]: plot_proc(df_res_pres2014,"lesniak_proc","% of voters - Lesniak - 2014")
```



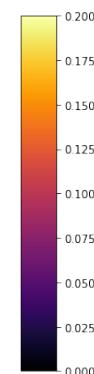
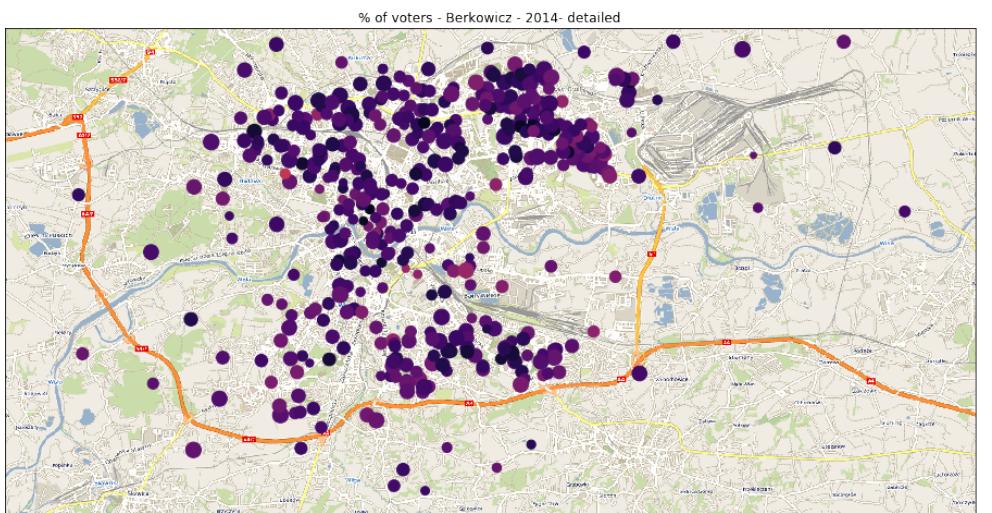
```
In [44]: plot_proc(df_res_pres2014,"lesniak_proc","% of voters - Lesniak - 2014- detailed",vmin
```



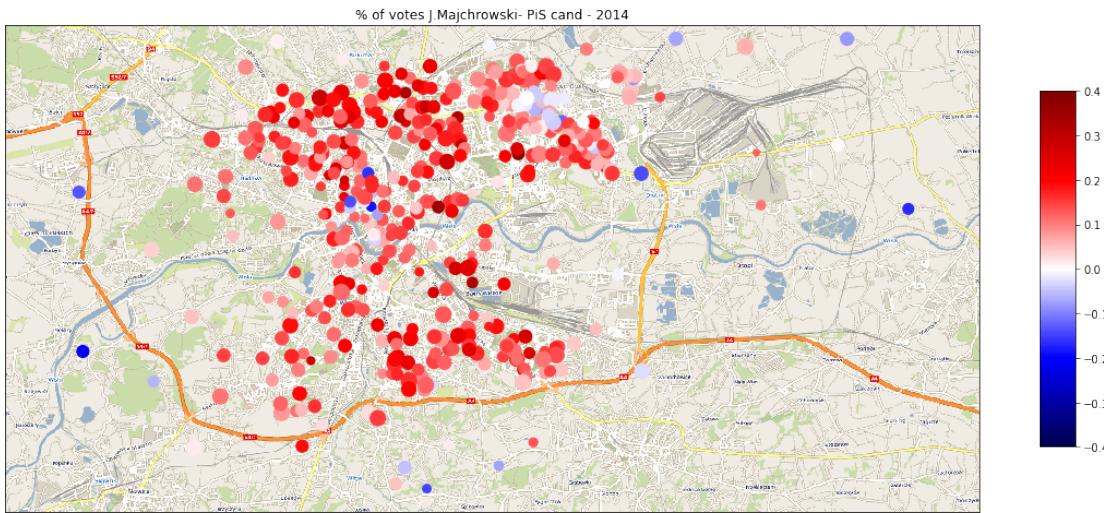
```
In [45]: plot_proc(df_res_pres2014,"berkowicz_proc","% of voters - Berkowicz - 2014")
```



```
In [46]: plot_proc(df_res_pres2014,"berkowicz_proc","% of voters - Berkowicz - 2014- detailed")
```



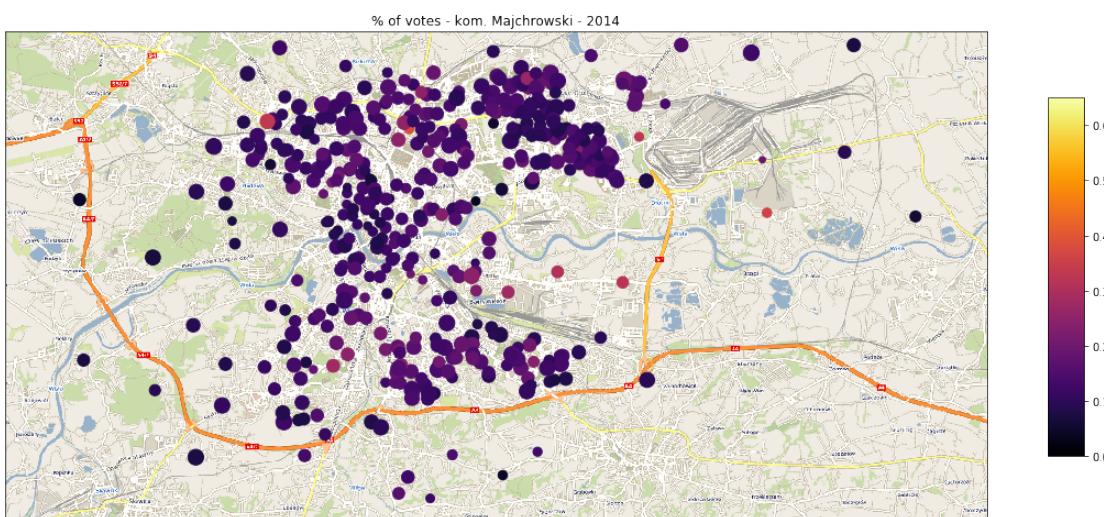
```
In [48]: plot_proc_compare(df_res_pres2014,"majchrowski_proc","pis_proc","% of votes J.Majchrowi
```



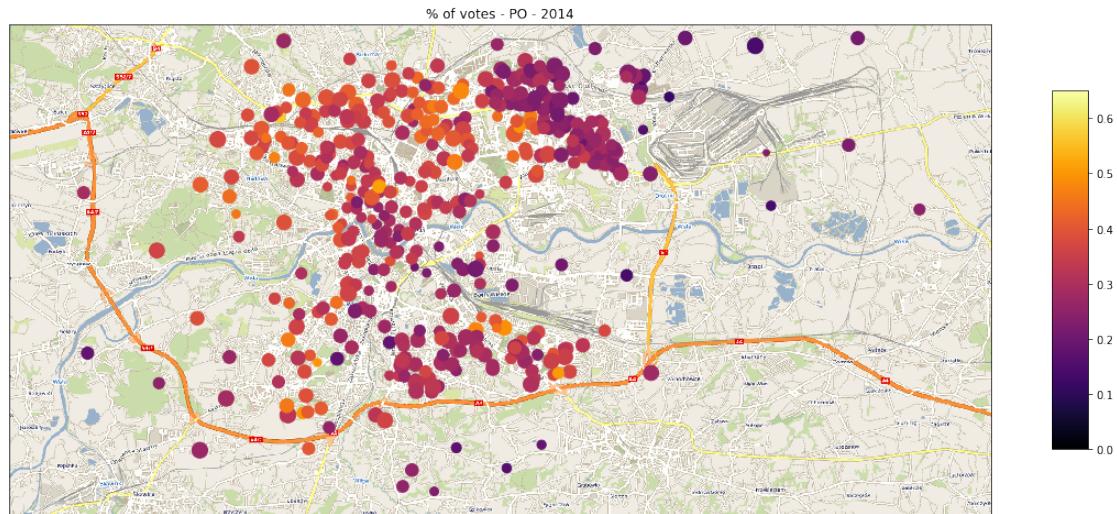
1. J. Majchrowski najwysze poparcie mia w pd. i pn osiedlach a najniższe w Centrum, Nowej Hucie oraz części pd. zach miasta (Ruczaj).
2. Kandydat PiS największy procent ogo otrzyma w Nowej Hucie oraz w Centrum, a także obrzezach miasta (z wyjątkiem Bronowic) i w tych miejscach wygrywa z JM.
3. . Góra najlepste wyniki mia na Ruczaju, Górcie Narodowej, Olszy, Toniach. Jednak ogólnie były one niższe od dwójki najlepszych kandydatów.
4. Kandydatka PO największe poparcie mia na Ruczaju i w Bronowicach jednak ogólnie było ono niskie.

### wybory do rady miasta

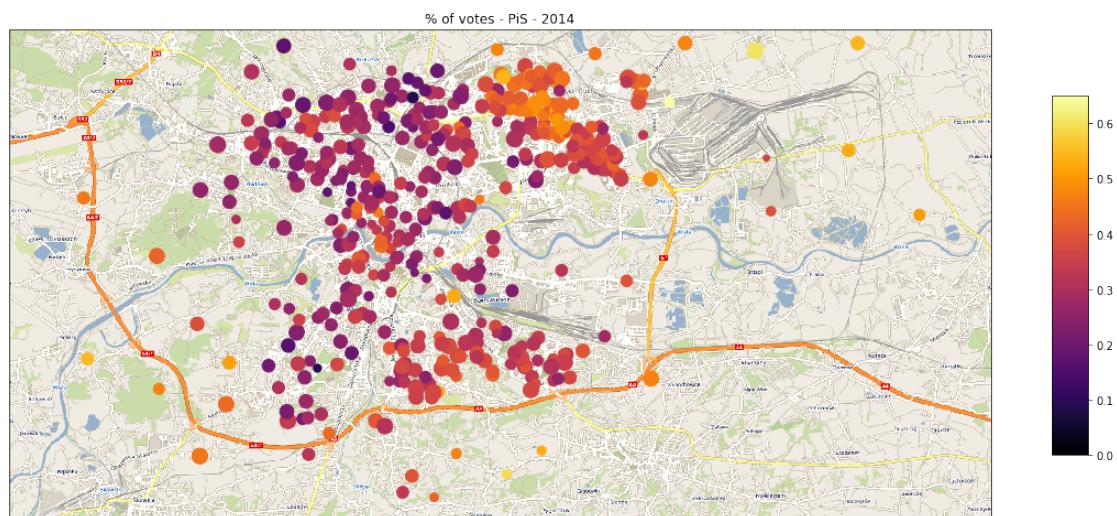
In [50]: `plot_proc(df_res_rada2014, "majchrowski_proc", "% of votes - kom. Majchrowski - 2014")`



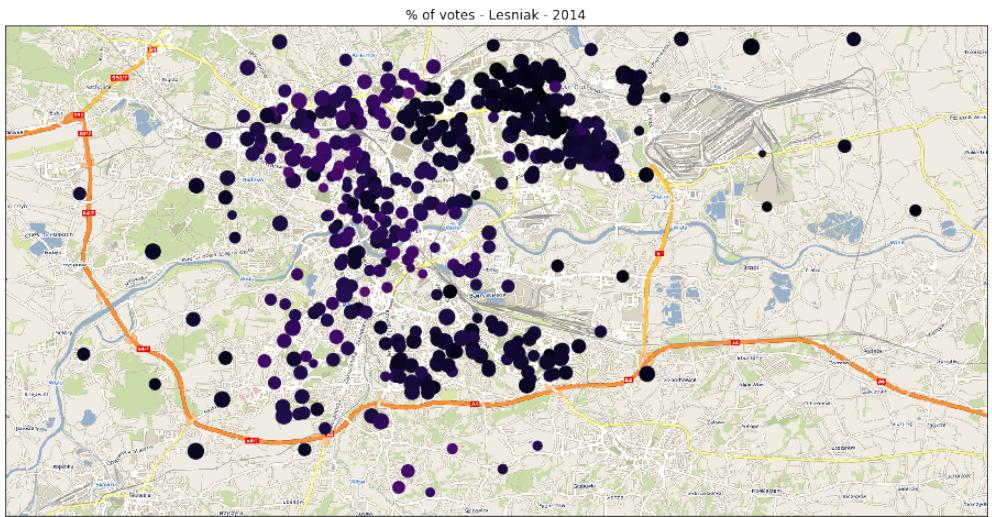
```
In [51]: plot_proc(df_res_rada2014,"po_proc","% of votes - PO - 2014")
```



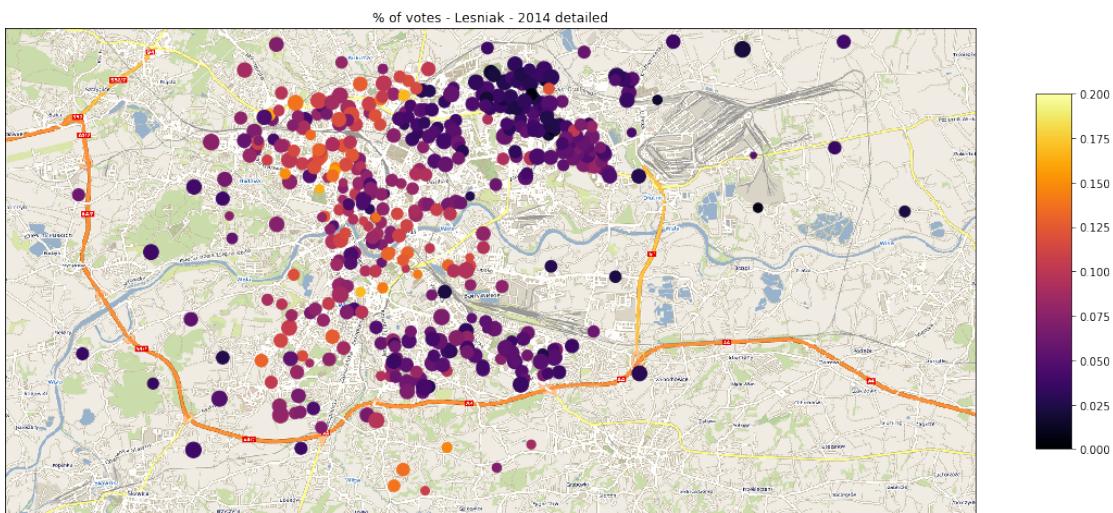
```
In [52]: plot_proc(df_res_rada2014,"pis_proc","% of votes - PiS - 2014")
```



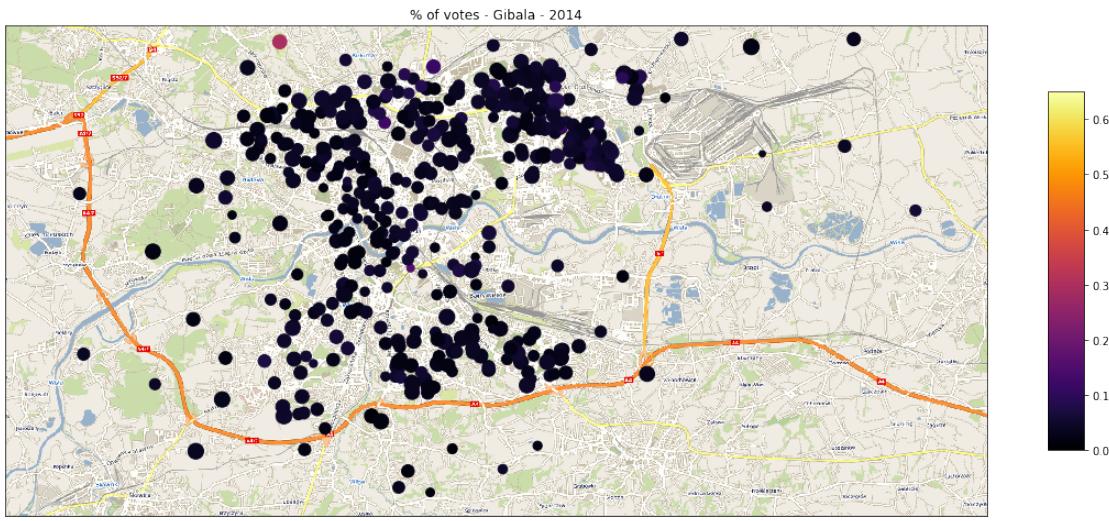
```
In [53]: plot_proc(df_res_rada2014,"lewica_proc","% of votes - Lesniak - 2014")
```



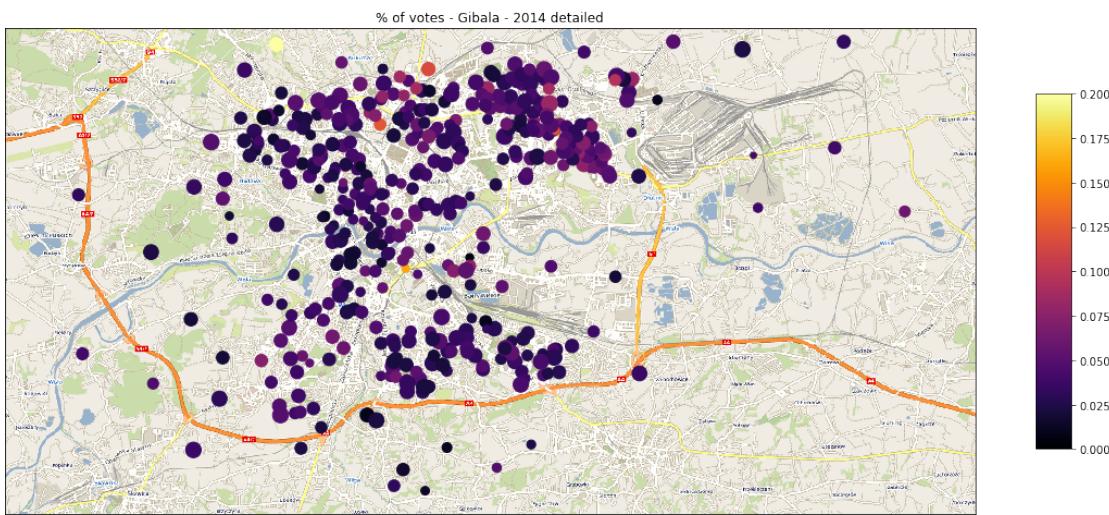
```
In [54]: plot_proc(df_res_rada2014,"lewica_proc","% of votes - Lesniak - 2014 detailed",vmin=0
```



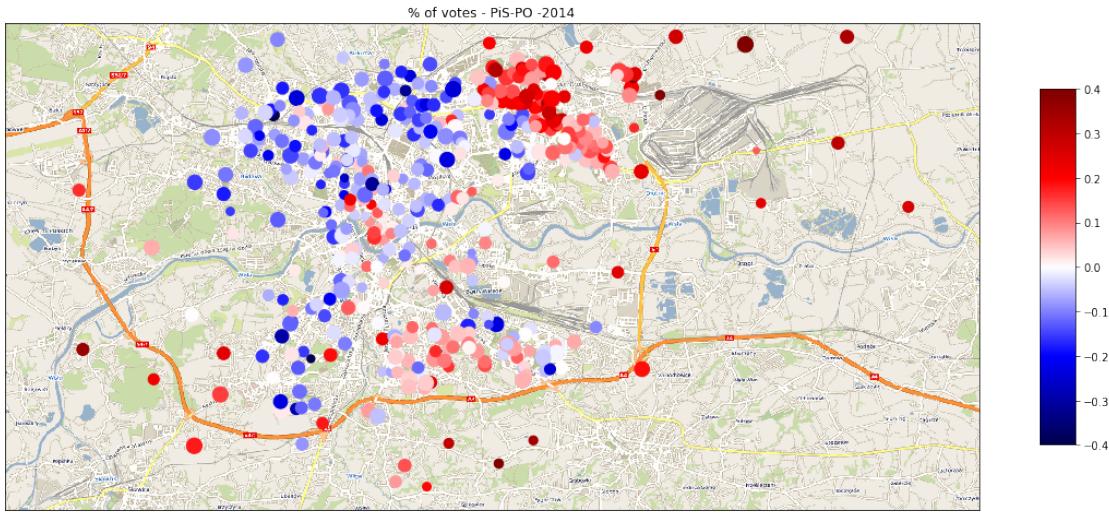
```
In [55]: plot_proc(df_res_rada2014,"gibalaproc","% of votes - Gibala - 2014")
```



```
In [56]: plot_proc(df_res_rada2014,"gibalaproc","% of votes - Gibala - 2014 detailed",vmin=0,vmax=0.6)
```

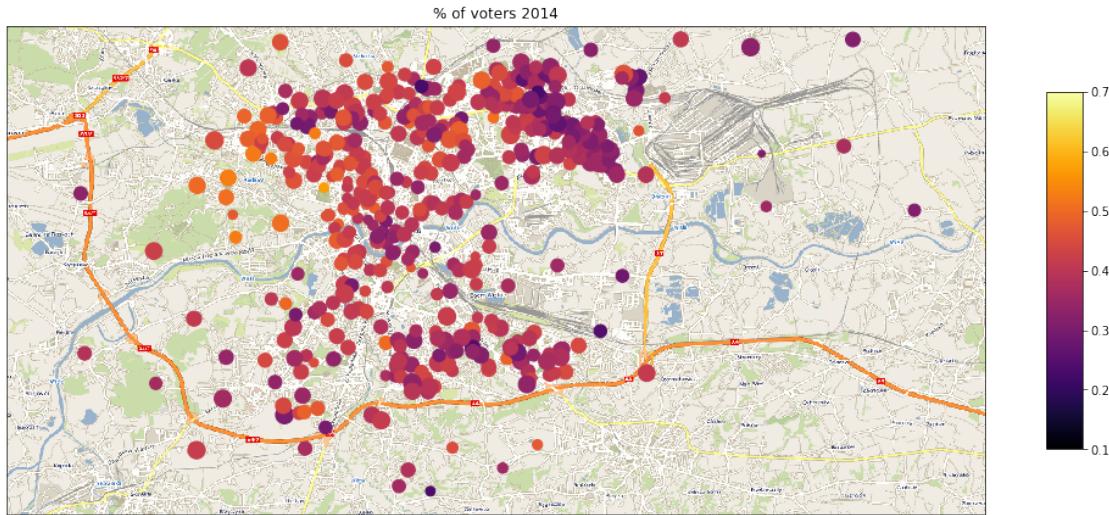


```
In [57]: plot_proc_compare(df_res_rada2014,"pis_proc","po_proc","% of votes - PiS-PO -2014")
```



```
In [58]: plt.figure(figsize=(18,18))
krk_map.scatter(df_res_rada2014['lon'].tolist(), df_res_rada2014['lat'].tolist(), s=df_
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters 2014")
```

Out [58]: <matplotlib.text.Text at 0xd7d3ac8>



```
In [59]: scipy.stats.pearsonr(df_res_rada2014["pis_proc"],df_res_rada2014["votes"]/df_res_pres
```

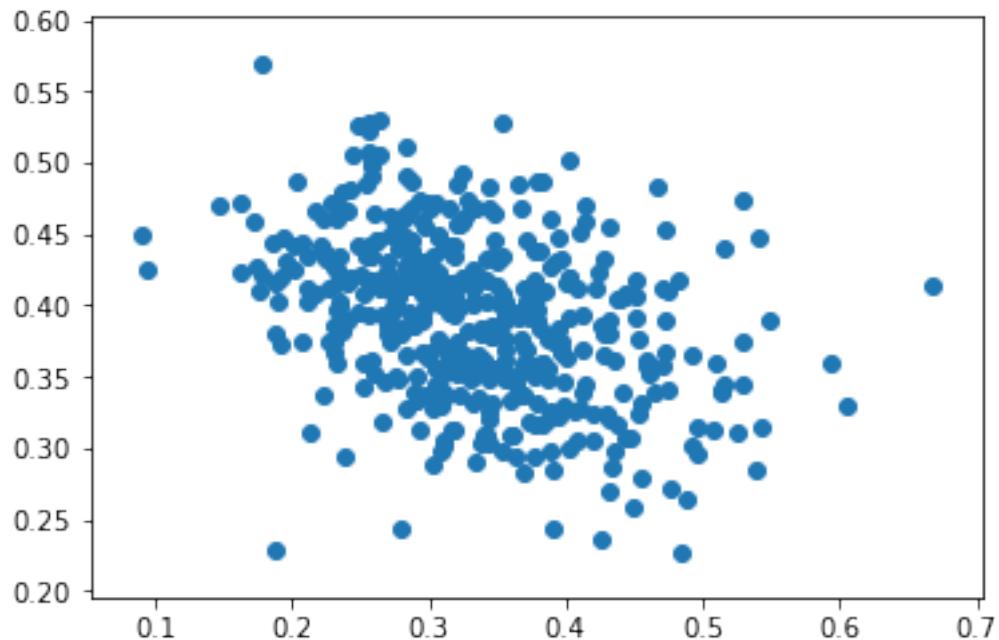
Out [59]: (-0.37223571060443844, 2.6557709907444207e-16)

```
In [60]: scipy.stats.pearsonr(df_res_rada2014["po_proc"],df_res_rada2014["votes"]/df_res_pres2014["max_votes"])
```

```
Out[60]: (0.43628485592640104, 1.9901723651075978e-22)
```

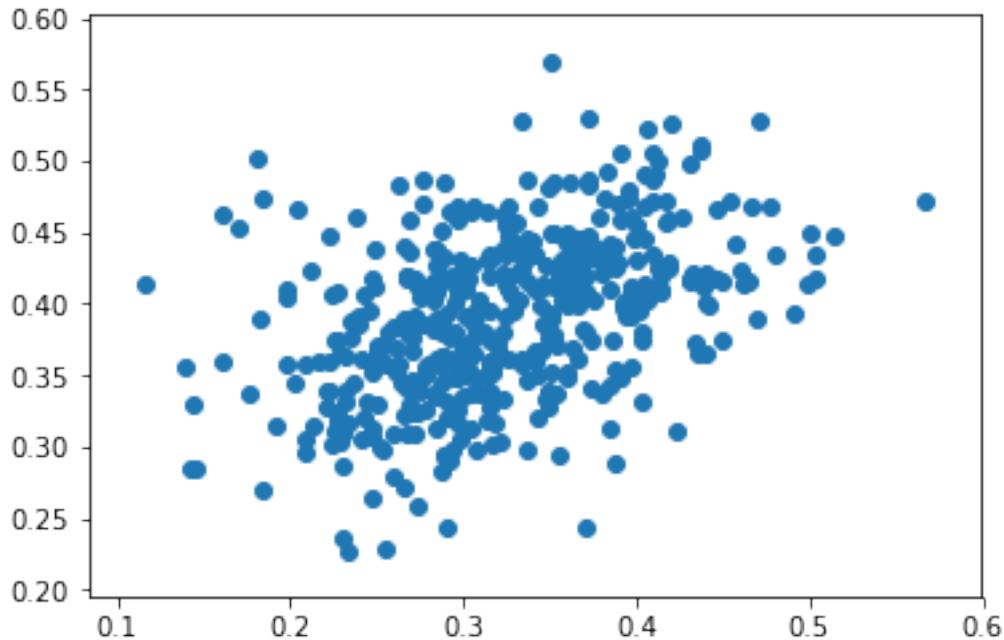
```
In [61]: plt.scatter(df_res_rada2014["pis_proc"],df_res_rada2014["votes"]/df_res_pres2014["max_votes"])
```

```
Out[61]: <matplotlib.collections.PathCollection at 0xd008e80>
```



```
In [62]: plt.scatter(df_res_rada2014["po_proc"],df_res_rada2014["votes"]/df_res_pres2014["max_votes"])
```

```
Out[62]: <matplotlib.collections.PathCollection at 0xe2dd128>
```



1. Największe poparcie dla PO jest ogólnie w zach części miasta (Ruczaj, Bronowice) z wyjątkiem obrzeży (Tyniec, Skotniki) oraz w okolicach Górk Narodowej i Prdnika Czerwonego.
2. PiS najlepsze wyniki mia w Nowej Hucie, czsci Centrum oraz na obrzeach miasta z wyjątkiem Bronowic
3. Zarówno wyniki wyborcze PO jak i PiS wykazują korelacja z frekwencj odpowiednio dodań i ujemn.

## 1.2 Analiza pionowa

### wybory do rady miasta

```
In [7]: table_rada2014=pd.pivot_table(df_res_rada2014, values=komitety, columns=["obwod06"], ag
```

```
In [8]: table_rada2010=pd.pivot_table(df_res_rada2010, values=komitety, columns=["obwod06"], ag
```

```
In [9]: table_rada2006=pd.pivot_table(df_res_rada2006, values=komitety, columns=["nr_obwodu"], ag
```

```
In [66]: # wyniki zbiorcze rok 2006
df_res_rada2006[komitety].sum()
```

```
Out[66]: majchrowski      26504
          po            90010
          pis           67937
          gibal           0
          lewica        19104
```

```
berkowicz          0
inni            33998
votes           237553
max_voters     581900
dtype: int64
```

```
In [67]: # wyniki zbiorcze rok 2010
df_res_rada2010[komitety].sum()
```

```
Out[67]: majchrowski    35527
po            103040
pis           65276
gibala         0
lewica        18641
berkowicz      0
inni           20140
votes          242624
max_voters    582410
dtype: int64
```

```
In [68]: # wyniki zbiorcze rok 2014
df_res_rada2014[komitety].sum()
```

```
Out[68]: majchrowski    30440
po            74528
pis           75340
gibala        9047
lewica        15380
berkowicz     12664
inni           10395
votes          227794
max_voters    581900
dtype: int64
```

```
In [10]: roz_ra2010_14=table_rada2014-table_rada2010
roz_ra2006_10=table_rada2010-table_rada2006
```

```
In [11]: rada_2006pr=table_rada2006/table_rada2006.iloc[8]
rada_2006pr.iloc[5]=table_rada2006.iloc[8]/table_rada2006.iloc[5]
rada_2010pr=table_rada2010/table_rada2010.iloc[8]
rada_2010pr.iloc[5]=table_rada2010.iloc[8]/table_rada2010.iloc[5]
rada_2014pr=table_rada2014/table_rada2014.iloc[8]
rada_2014pr.iloc[5]=table_rada2014.iloc[8]/table_rada2014.iloc[5]
```

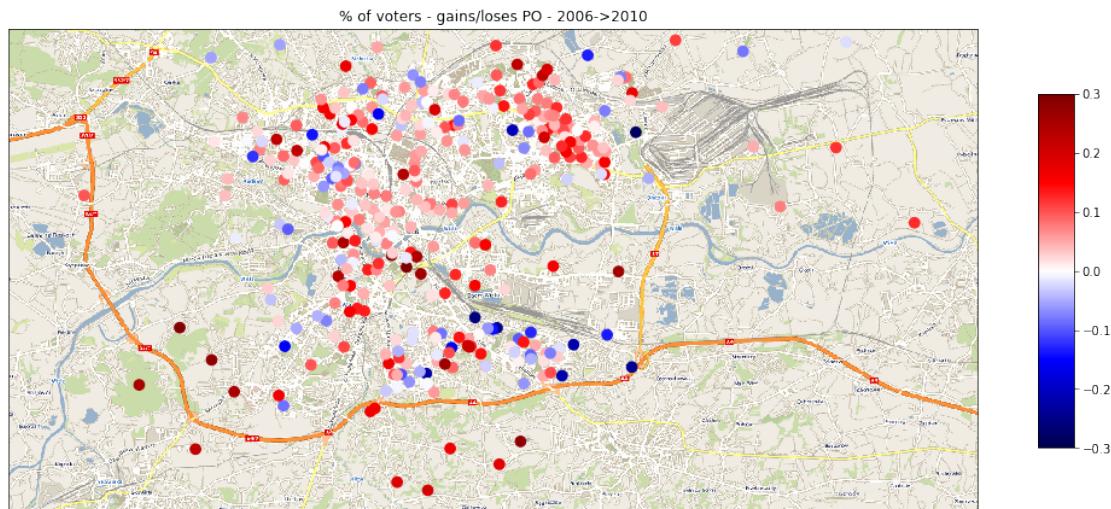
```
In [12]: roz_rada2010_14pr=rada_2014pr-rada_2010pr
roz_rada2010_14pr=roz_rada2010_14pr.dropna(0, how='all')
roz_rada2006_10pr=rada_2010pr-rada_2006pr
roz_rada2006_10pr=roz_rada2006_10pr.dropna(0, how='all')
```

```
In [13]: #gains_lose2010_14pr=pd.DataFrame()
def gains_loses_df(piv_tb):
    gl_df=pd.DataFrame()
    gl_df["nr_obwodu"]=piv_tb.columns
    columns=["berkowicz","gibalala","inni","lewica","majchrowski","max_voters","pis","po"]
    i=0
    for col in columns:
        gl_df[col]=piv_tb.iloc[i].tolist()
        i+=1
    gl_df['lat']=gl_df["nr_obwodu"].apply(map_obwody_lat)
    gl_df['lon']=gl_df["nr_obwodu"].apply(map_obwody_lon)
    gl_df=gl_df.dropna(how="any",axis=0)
    return gl_df
```

```
In [14]: gains_lose2010_14pr=gains_loses_df(roz_rada2010_14pr)
gains_lose2010_14=gains_loses_df(roz_ra2010_14)
gains_lose2006_10pr=gains_loses_df(roz_rada2006_10pr)
gains_lose2006_10=gains_loses_df(roz_ra2006_10)
```

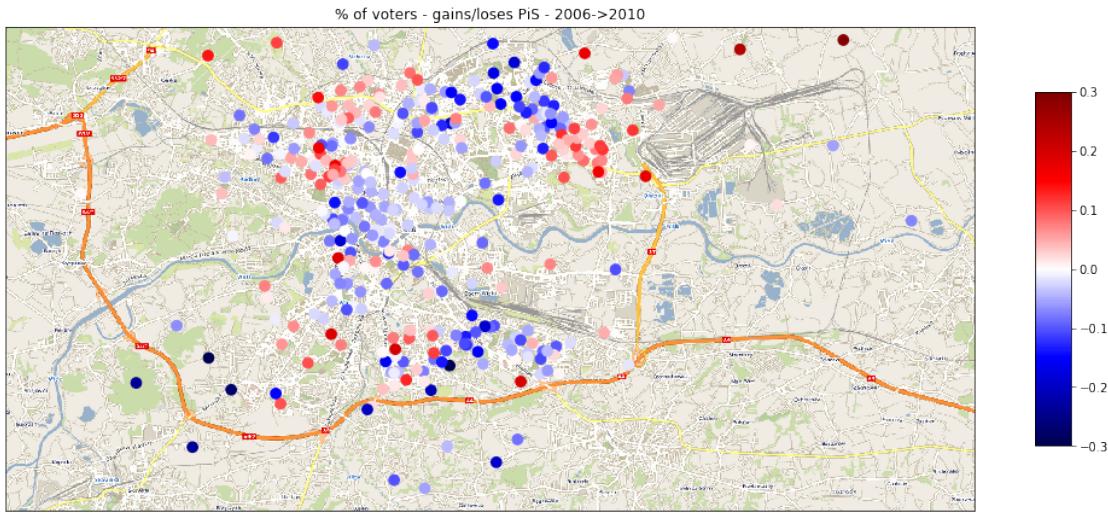
```
In [82]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2006_10pr['lon'].tolist(), gains_lose2006_10pr['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PO - 2006->2010")
```

```
Out[82]: <matplotlib.text.Text at 0xdf98a90>
```



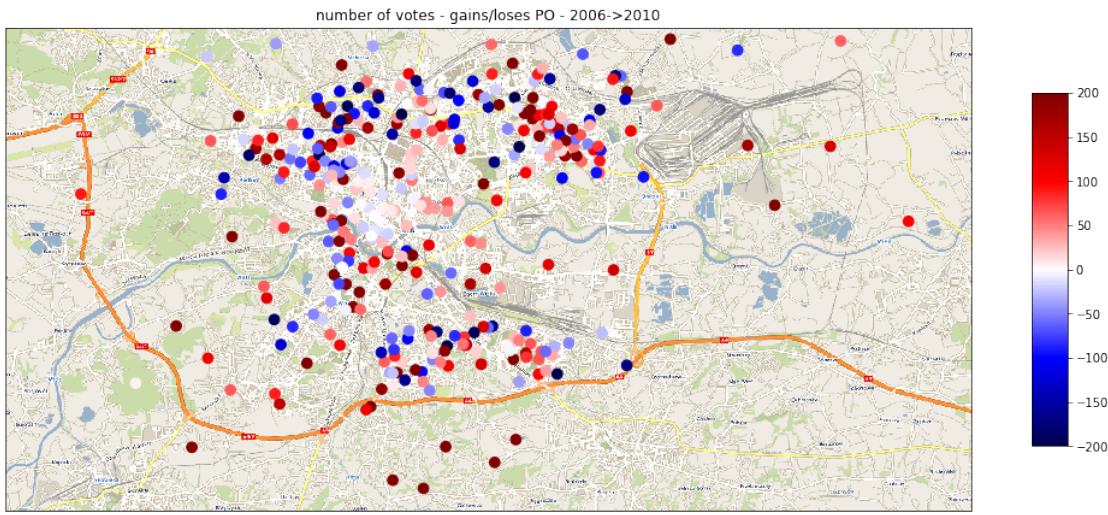
```
In [81]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2006_10pr['lon'].tolist(), gains_lose2006_10pr['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PiS - 2006->2010")
```

```
Out[81]: <matplotlib.text.Text at 0xcff0c18>
```



```
In [83]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2006_10['lon'].tolist(), gains_lose2006_10['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000, )
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of votes - gains/loses PO - 2006->2010")
```

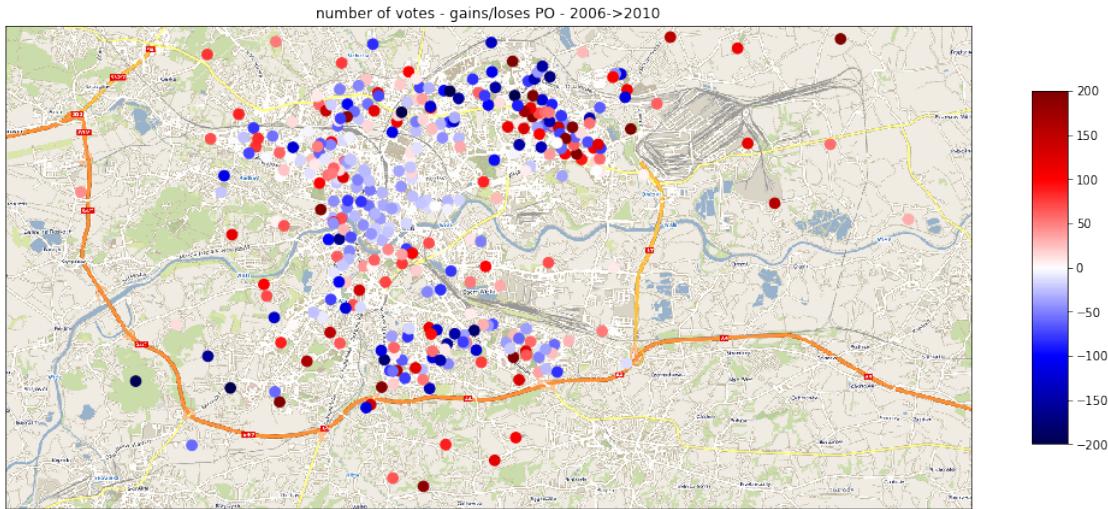
```
Out[83]: <matplotlib.text.Text at 0xe770f98>
```



```
In [84]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2006_10['lon'].tolist(), gains_lose2006_10['lat'].tolist(),
```

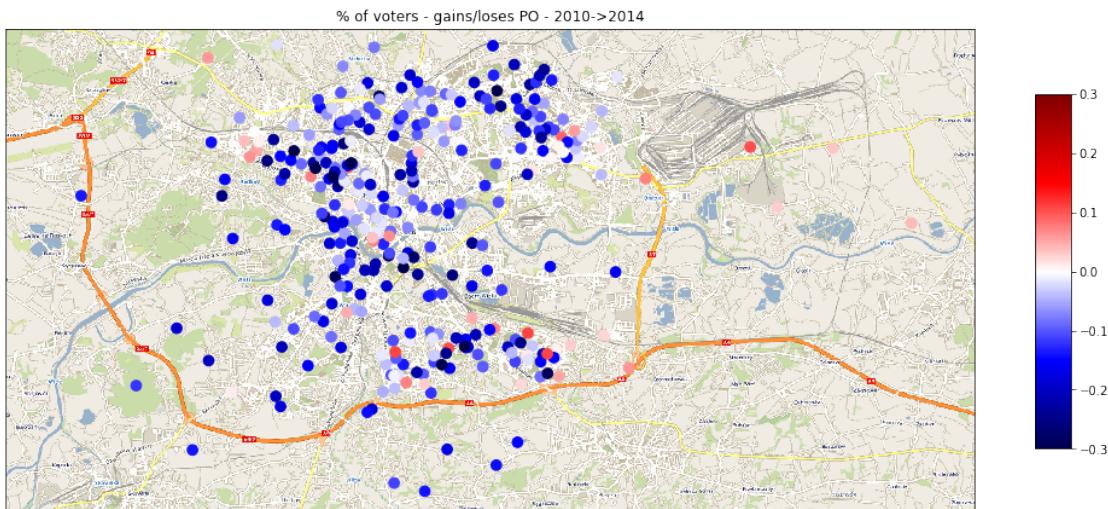
```
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of votes - gains/loses PO - 2006->2010")
```

Out [84]: <matplotlib.text.Text at 0xde3c780>



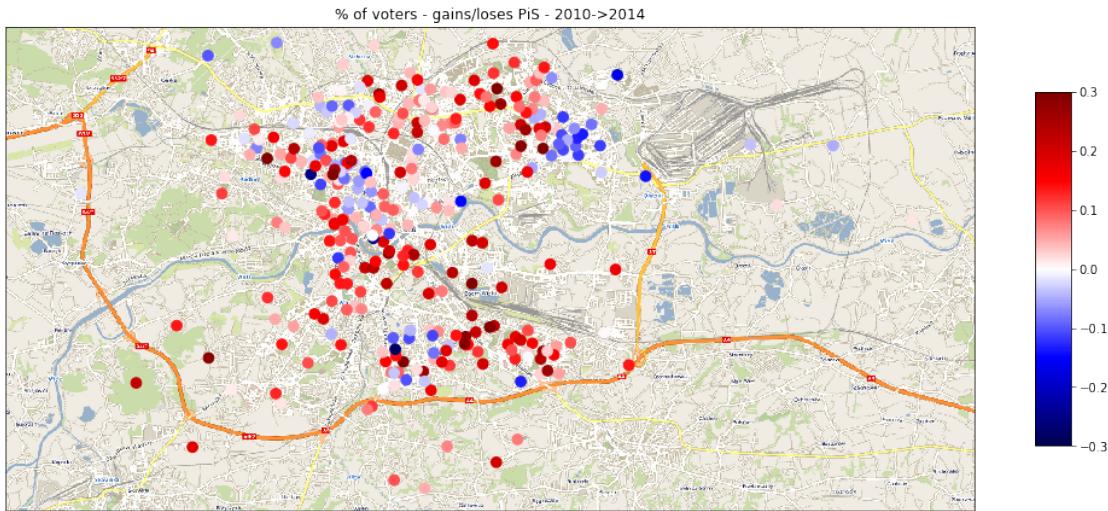
```
In [85]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2010_14pr['lon'].tolist(), gains_lose2010_14pr['lat'].tolist()
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PO - 2010->2014")
```

Out [85]: <matplotlib.text.Text at 0xdf3eb70>



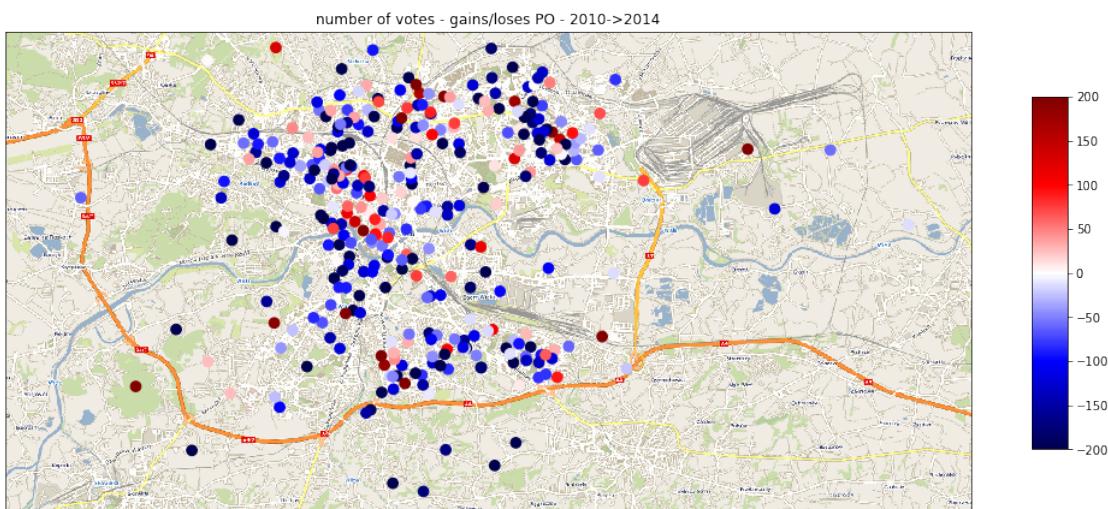
```
In [86]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2010_14pr['lon'].tolist(), gains_lose2010_14pr['lat'].tolist()
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PiS - 2010->2014")
```

Out[86]: <matplotlib.text.Text at 0xf8a3c18>



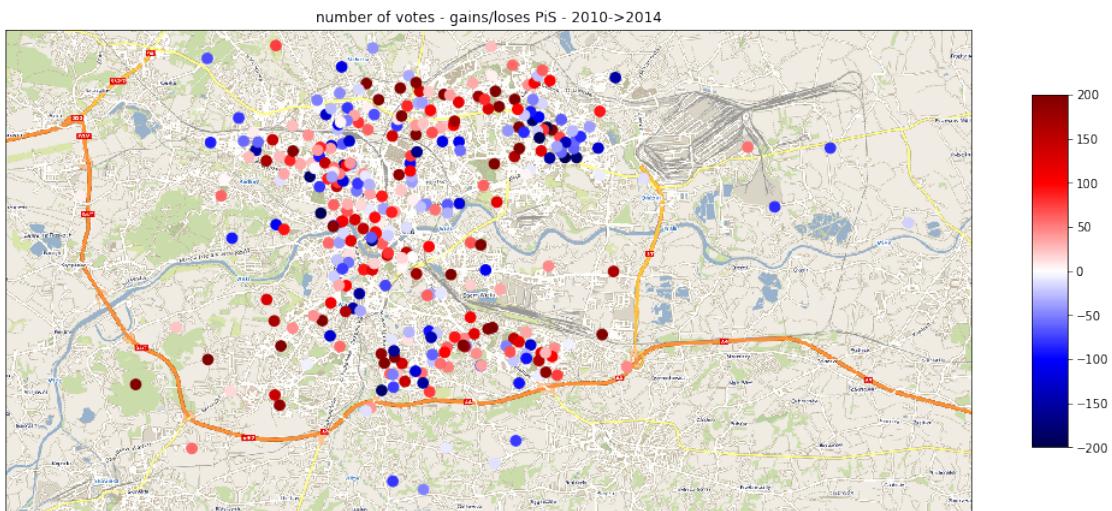
```
In [87]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2010_14['lon'].tolist(), gains_lose2010_14['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of votes - gains/loses PO - 2010->2014")
```

Out[87]: <matplotlib.text.Text at 0xfbcb7828>



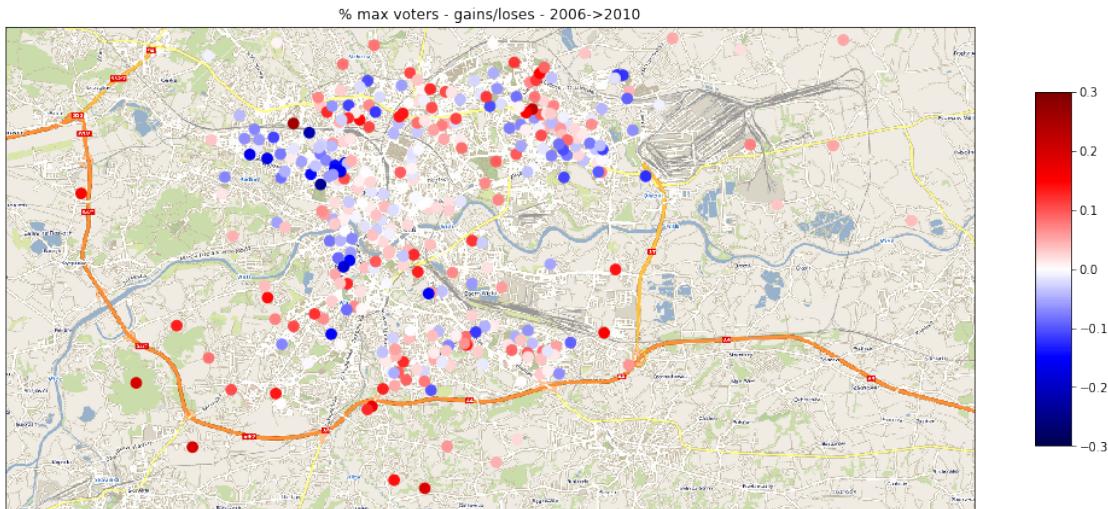
```
In [88]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2010_14['lon'].tolist(), gains_lose2010_14['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of votes - gains/loses PiS - 2010->2014")
```

Out[88]: <matplotlib.text.Text at 0x103cd080>



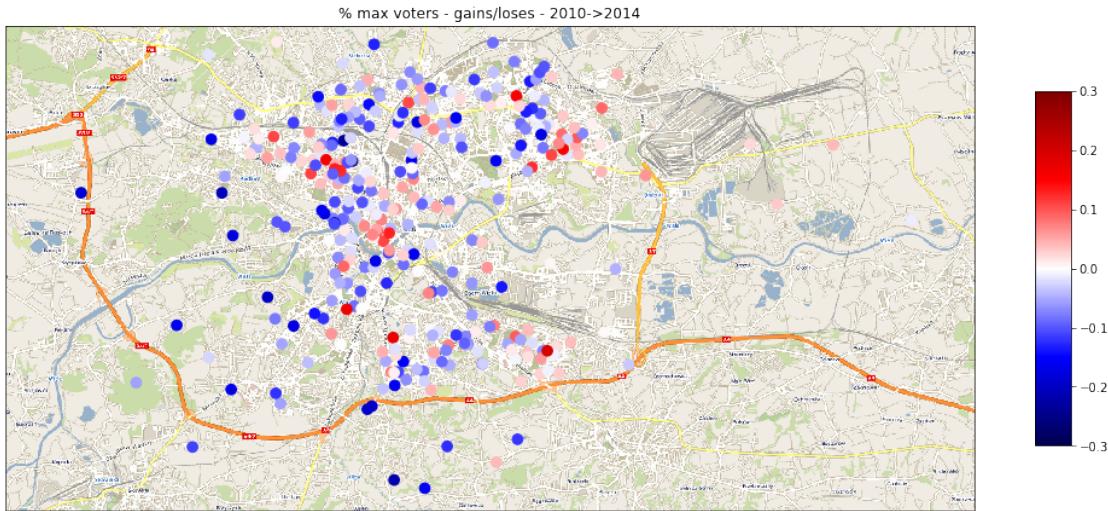
```
In [60]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2006_10pr['lon'].tolist(), gains_lose2006_10pr['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% max voters - gains/loses - 2006->2010")
```

Out[60]: <matplotlib.text.Text at 0xc979e10>



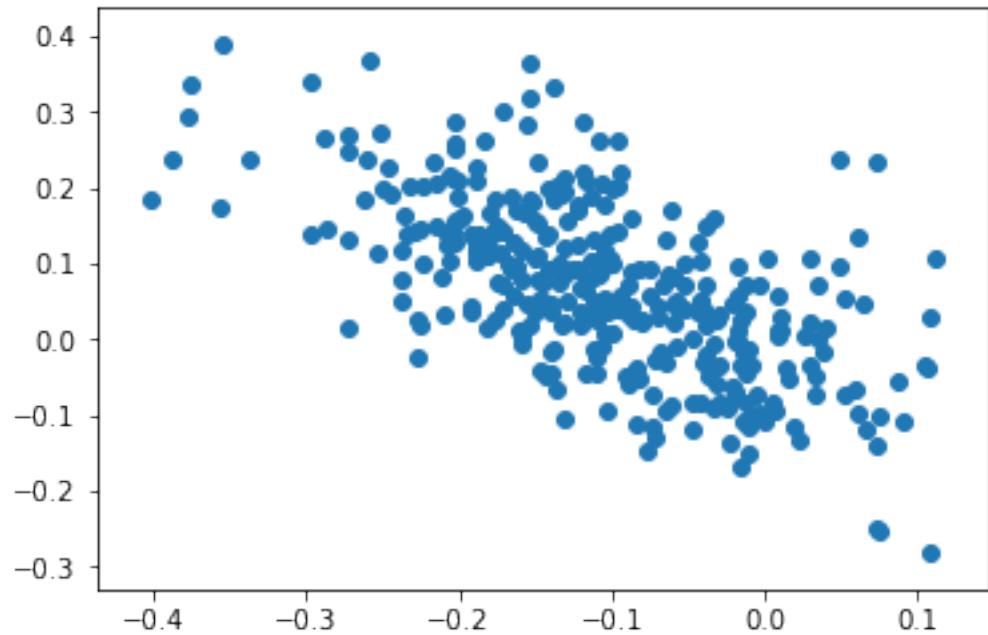
```
In [62]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose2010_14pr['lon'].tolist(), gains_lose2010_14pr['lat'].tolist()
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% max voters - gains/loses - 2010->2014")
```

```
Out[62]: <matplotlib.text.Text at 0xf6c2710>
```



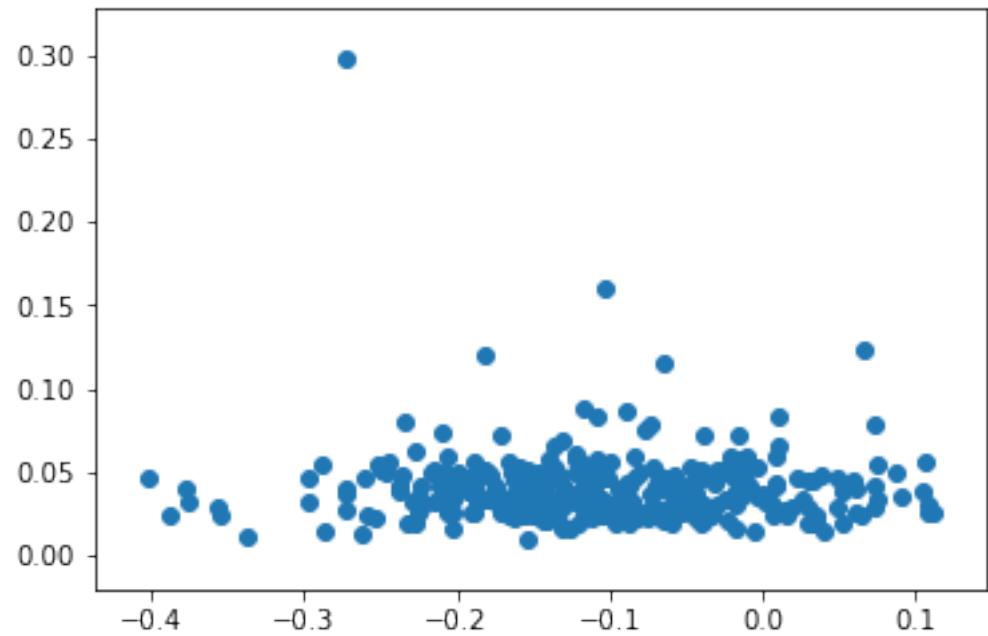
```
In [89]: plt.scatter(gains_lose2010_14pr['po'],gains_lose2010_14pr['pis'])
```

```
Out[89]: <matplotlib.collections.PathCollection at 0x101dd4a8>
```



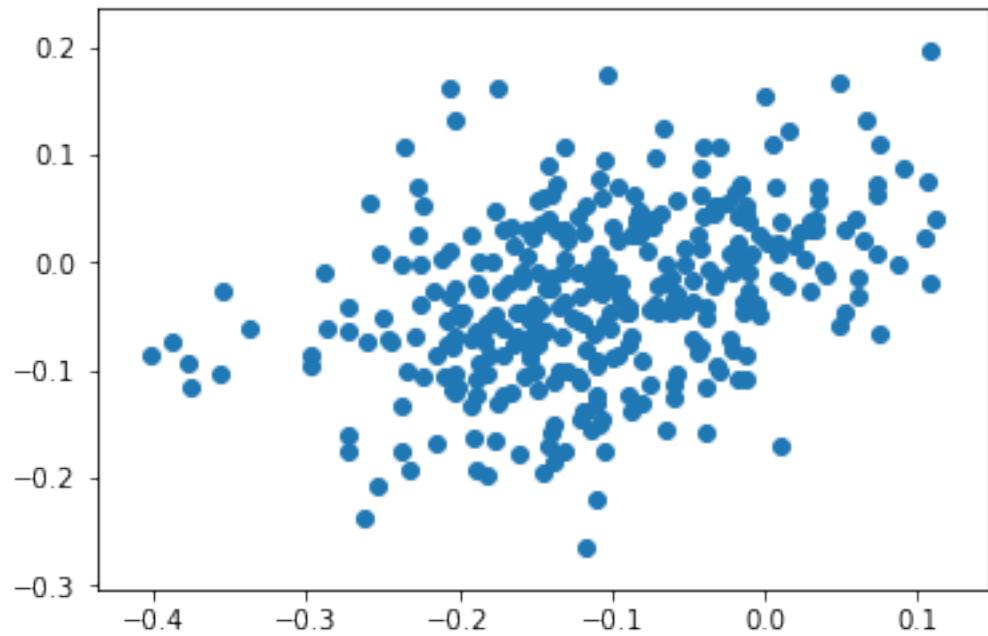
```
In [93]: plt.scatter(gains_lose2010_14pr['po'],gains_lose2010_14pr['gibalal'])
```

```
Out[93]: <matplotlib.collections.PathCollection at 0x1047ff60>
```



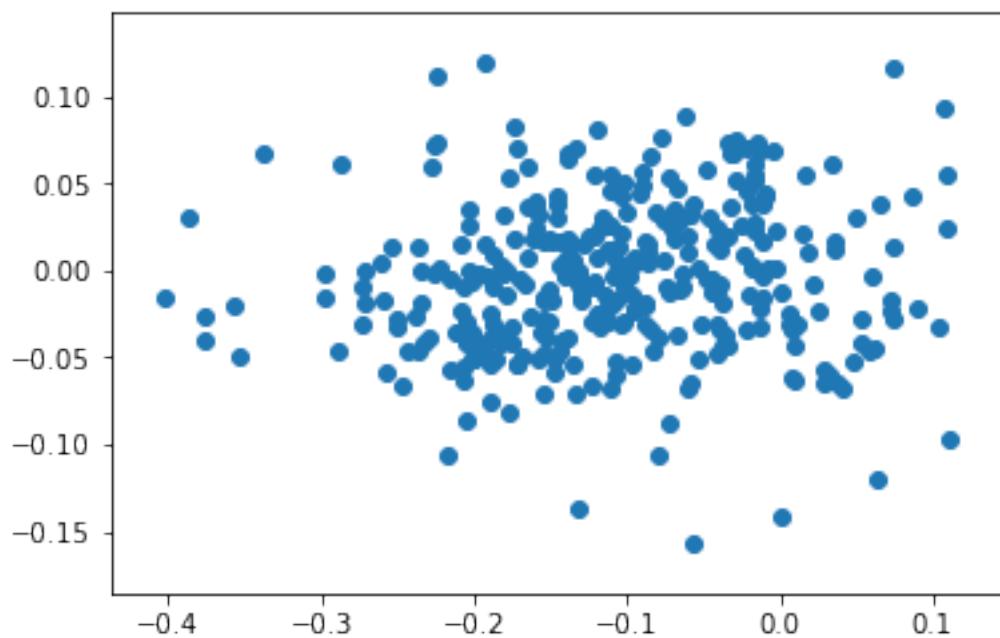
```
In [94]: plt.scatter(gains_lose2010_14pr['po'],gains_lose2010_14pr['max_voters'])
```

```
Out[94]: <matplotlib.collections.PathCollection at 0x10520048>
```



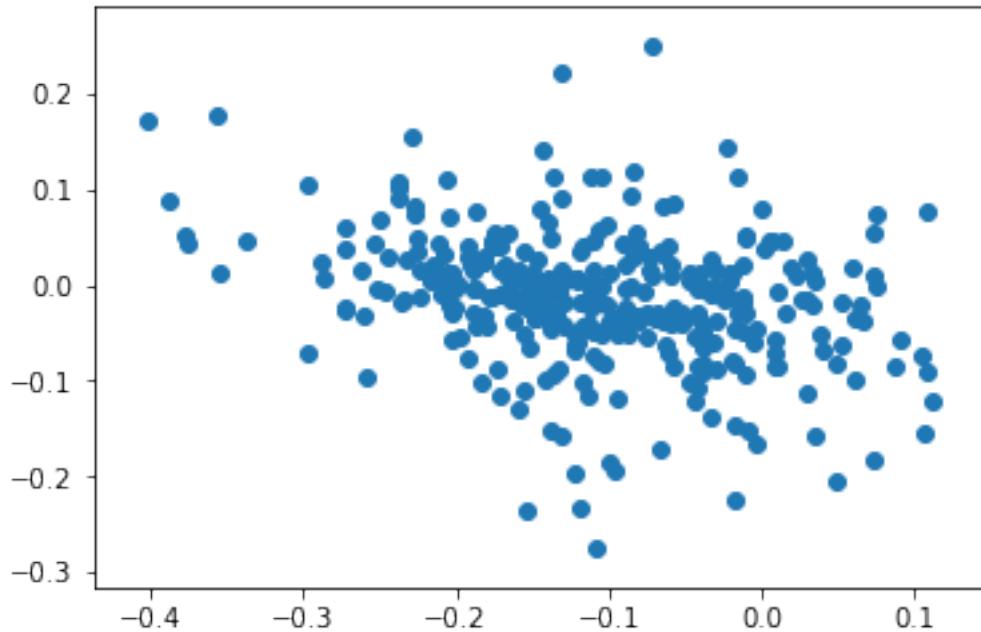
```
In [95]: plt.scatter(gains_lose2010_14pr['po'],gains_lose2010_14pr['lewica'])
```

```
Out[95]: <matplotlib.collections.PathCollection at 0x105b0978>
```



```
In [96]: plt.scatter(gains_lose2010_14pr['po'],gains_lose2010_14pr['majchrowski'])
```

```
Out[96]: <matplotlib.collections.PathCollection at 0x177a5160>
```



```
In [97]: scipy.stats.pearsonr(gains_lose2010_14pr['po'],gains_lose2010_14pr['majchrowski'])
```

```
Out[97]: (-0.30236624146286356, 1.8102144255065819e-08)
```

```
In [19]: scipy.stats.pearsonr(gains_lose2010_14pr['po'],gains_lose2010_14pr['pis']-gains_lose2010_14pr['lewica'])
```

```
Out[19]: (-0.65379674286660527, 5.5287077081727654e-42)
```

```
In [99]: scipy.stats.pearsonr(gains_lose2010_14pr['po'],gains_lose2010_14pr['lewica'])
```

```
Out[99]: (0.076727921709766, 0.16242911019639161)
```

```
In [18]: scipy.stats.pearsonr(gains_lose2010_14pr['po'],gains_lose2010_14pr['gibal']+gains_lose2010_14pr['lewica'])
```

```
Out[18]: (-0.15727337035933989, 0.0040134368489439121)
```

```
In [100]: scipy.stats.pearsonr(gains_lose2010_14pr['po'],gains_lose2010_14pr['max_voters'])
```

```
Out[100]: (0.3814943203713293, 5.597835229942224e-13)
```

```
In [101]: scipy.stats.pearsonr(gains_lose2010_14pr['pis'],gains_lose2010_14pr['max_voters'])
```

```

Out[101]: (-0.28414739092487029, 1.3288142444354072e-07)

In [102]: scipy.stats.pearsonr(gains_lose2010_14pr['pis'],gains_lose2010_14pr['gibal'])
Out[102]: (-0.1515984654432565, 0.0055704653312903391)

In [103]: scipy.stats.pearsonr(gains_lose2010_14pr['pis'],gains_lose2010_14pr['berkowicz'])

Out[103]: (-0.13590281180480851, 0.013057590094836825)

In [104]: scipy.stats.pearsonr(gains_lose2010_14pr['pis'],gains_lose2010_14pr['inni'])

Out[104]: (-0.21709754607061291, 6.4829807435890513e-05)

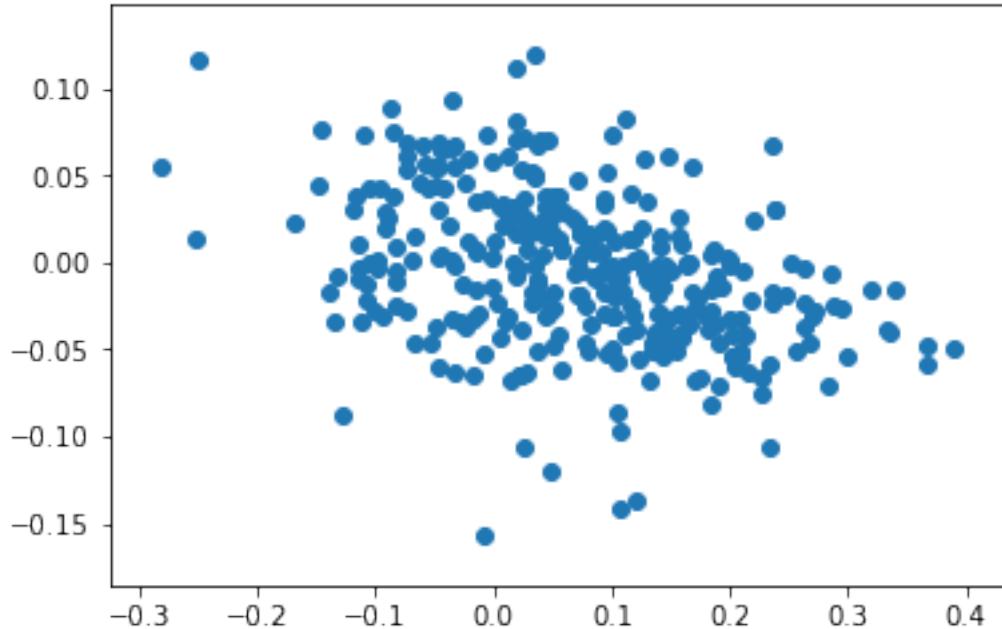
In [105]: scipy.stats.pearsonr(gains_lose2010_14pr['pis'],gains_lose2010_14pr['lewica'])

Out[105]: (-0.37954400026150509, 7.4973275102090713e-13)

In [106]: plt.scatter(gains_lose2010_14pr['pis'],gains_lose2010_14pr['lewica'])

Out[106]: <matplotlib.collections.PathCollection at 0x17836da0>

```



```

In [107]: scipy.stats.pearsonr(gains_lose2010_14pr['max_voters'],gains_lose2010_14pr['lewica'])

Out[107]: (0.03305195220202551, 0.5478148067388432)

In [108]: scipy.stats.pearsonr(gains_lose2006_10pr['po'],gains_lose2006_10pr['max_voters'])

```

```

Out[108]: (0.32958477247033036, 1.2061795512719534e-10)

In [109]: scipy.stats.pearsonr(gains_lose2006_10pr['po'],gains_lose2006_10pr['pis'])

Out[109]: (-0.44762295407725722, 2.7489270143465631e-19)

In [110]: scipy.stats.pearsonr(gains_lose2006_10pr['po'],gains_lose2006_10pr['lewica'])

Out[110]: (-0.13777129430514501, 0.0085790750687819491)

In [111]: scipy.stats.pearsonr(gains_lose2006_10pr['po'],gains_lose2006_10pr['inni'])

Out[111]: (-0.32420165153520086, 2.4953405158011583e-10)

```

1. W wyborach 2010r. w stosunku do 2006r. PO zyskao najwikszy odsetek wyborcow w Nowej Hucie, na obrzezach Krakowa, Debnikach, czsci bronowic. ogolnie PO zyskiwao w caym miecie.
2. W wyborach 2010r. w stosunku do 2006r. PiS w wiekszej czsci miasta straci poparcie. Zyskiwa gownie w centrum Nowej Huty, w czsci Bronowic oraz pd Krakowa.
3. W wyborach 2014r. w stosunku do 2010r. PO stracia poparcie niemal w caym miecie wyjatkiem s nieliczne obwody na pd, bronopwicahc i centrum. Najmocniej Po tracia w bronowicach i na pd. krakowa, a takze w pn czsci Nowej Huty.
4. PiS w wyborach 2014r. w stosunku do 2010r. zyskiwa w wiekszos z obwodów (Ruczaj, Bronowice, pd. osiedla, pn. NH), jednak takze w wielu równie traci poparcie (Centrum NH, Stare Miasto, okolice agiewnik/Kurdwanowa)
5. Zmiany poparcia dla PO i PiS s odpowiednio dodatnio i ujemnie skorelowane ze zmianami frekewencji co moze wiadcyc o tym e zmiany procentu poaprcia moze wynika z demobilizacji/mobilazacji wyborcow PO. Powtiera ten fakt moe to e liczba gosow oddanych na PO w poszczególnych latach różni sie znacznie bardziej ni liczba gosow oddanych na PiS.

## wybory prezydenckie

```

In [20]: table_pres2014=pd.pivot_table(df_res_pres2014, values=kandydaci, columns=["obwod06"],

In [21]: table_pres2010=pd.pivot_table(df_res_pres2010, values=kandydaci, columns=["obwod06"],

In [22]: table_pres2006=pd.pivot_table(df_res_pres2006, values=kandydaci, columns=["nr_obwodu"]

In [23]: #wyniki zbiorcze rok 2006
        df_res_pres2006[kandydaci].sum()

Out[23]: majchrowski      102602
          po              55603
          pis             63506
          gibala            0
          lesniak            0
          berkowicz           0
          inni              20792
          votes             242503
          max_voters         581900
          dtype: int64

```

```
In [24]: #wyniki zbiorcze rok 2010  
df_res_pres2010[kandydaci].sum()
```

```
Out[24]: majchrowski    102010  
          po            84440  
          pis           55926  
          gibalala       0  
          lesniak        0  
          berkowicz       0  
          inni            7841  
          votes           250217  
          max_voters     582410  
          dtype: int64
```

```
In [25]: #wyniki zbiorcze rok 2014  
df_res_pres2014[kandydaci].sum()
```

```
Out[25]: majchrowski    94527  
          po            22193  
          pis           65104  
          gibalala       27015  
          lesniak        11717  
          berkowicz       10445  
          inni            10603  
          votes           241604  
          max_voters     581898  
          dtype: int64
```

```
In [28]: roz_pres2010_14=table_pres2014-table_pres2010  
roz_pres2006_10=table_pres2010-table_pres2006
```

```
In [29]: pres_2006pr=table_pres2006/table_pres2006.iloc[8]  
pres_2006pr.iloc[5]=table_pres2006.iloc[8]/table_pres2006.iloc[5]  
pres_2010pr=table_pres2010/table_pres2010.iloc[8]  
pres_2010pr.iloc[5]=table_pres2010.iloc[8]/table_pres2010.iloc[5]  
pres_2014pr=table_pres2014/table_pres2014.iloc[8]  
pres_2014pr.iloc[5]=table_pres2014.iloc[8]/table_pres2014.iloc[5]
```

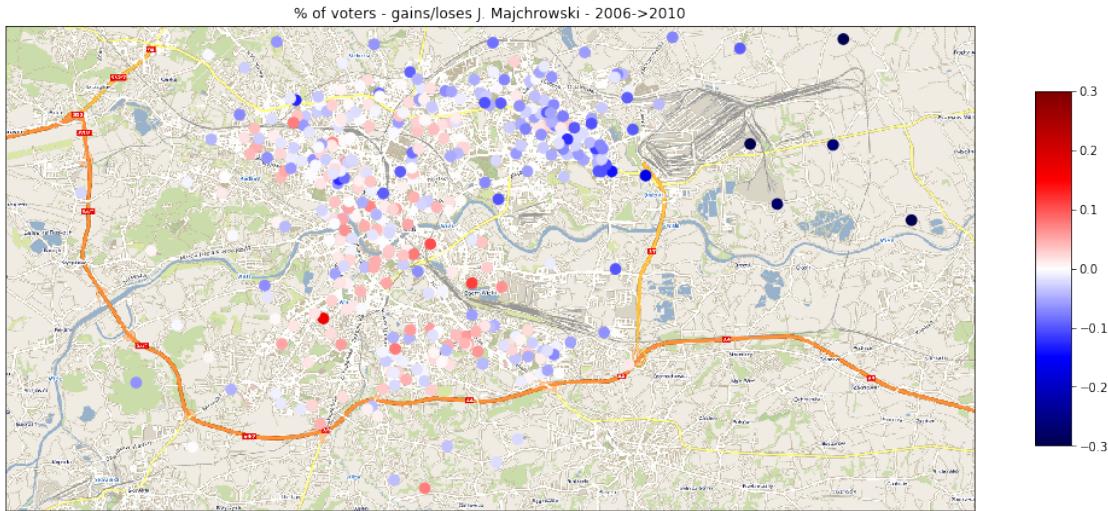
```
In [30]: roz_pres2010_14pr=pres_2014pr-pres_2010pr  
roz_pres2010_14pr=roz_pres2010_14pr.dropna(0, how='all')  
roz_pres2006_10pr=pres_2010pr-pres_2006pr  
roz_pres2006_10pr=roz_pres2006_10pr.dropna(0, how='all')
```

```
In [31]: gains_lose_pres2010_14pr=gains_loses_df(roz_pres2010_14pr)  
gains_lose_pres2010_14=gains_loses_df(roz_pres2010_14)  
gains_lose_pres2006_10pr=gains_loses_df(roz_pres2006_10pr)  
gains_lose_pres2006_10=gains_loses_df(roz_pres2006_10)
```

```
In [36]: plt.figure(figsize=(18,18))  
krk_map.scatter(gains_lose_pres2006_10pr['lon'].tolist(), gains_lose_pres2006_10pr['lat'].list())
```

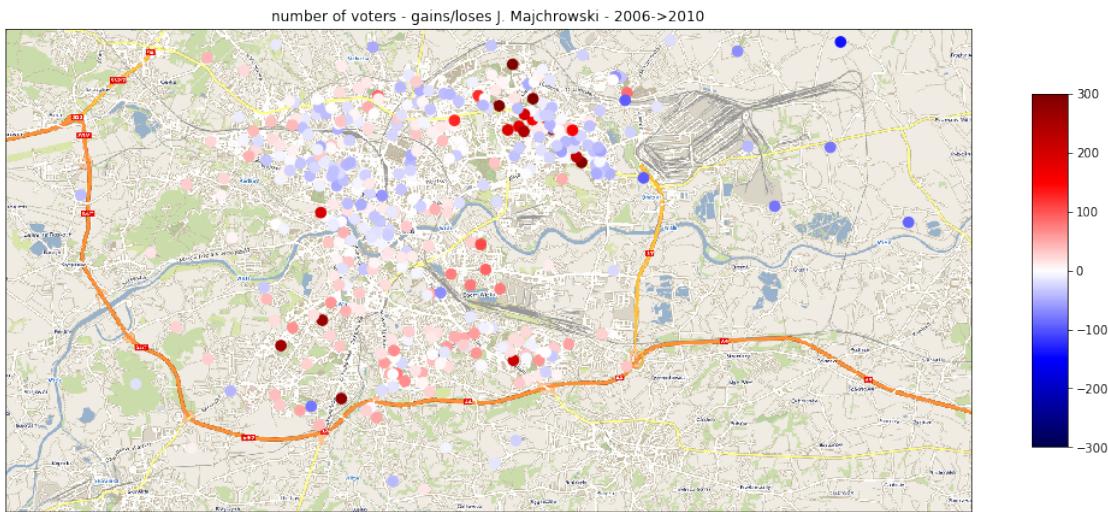
```
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses J. Majchrowski - 2006->2010")
```

Out [36]: <matplotlib.text.Text at 0xd2848d0>



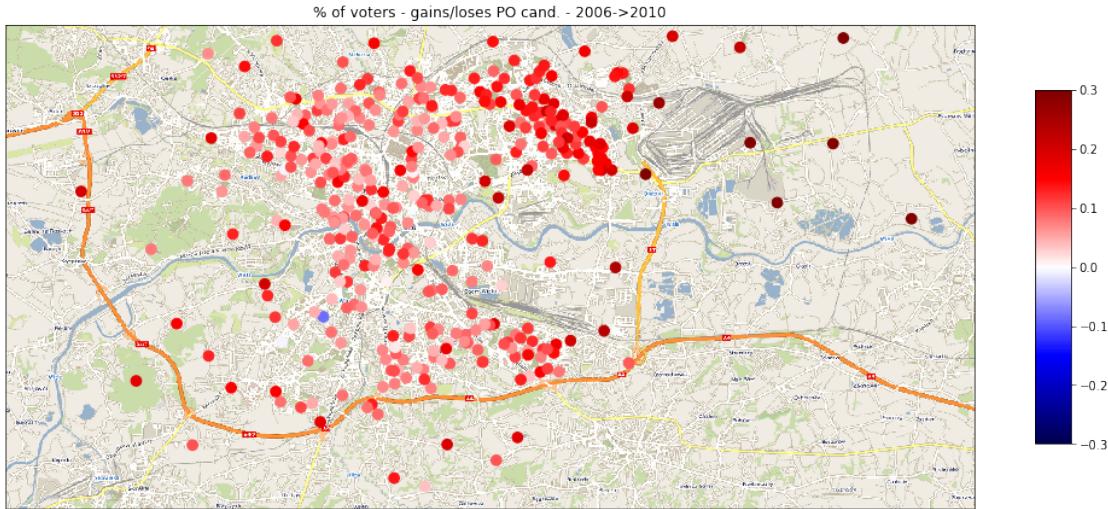
```
In [37]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2006_10['lon'].tolist(), gains_lose_pres2006_10['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of voters - gains/loses J. Majchrowski - 2006->2010")
```

Out [37]: <matplotlib.text.Text at 0xd8c6080>



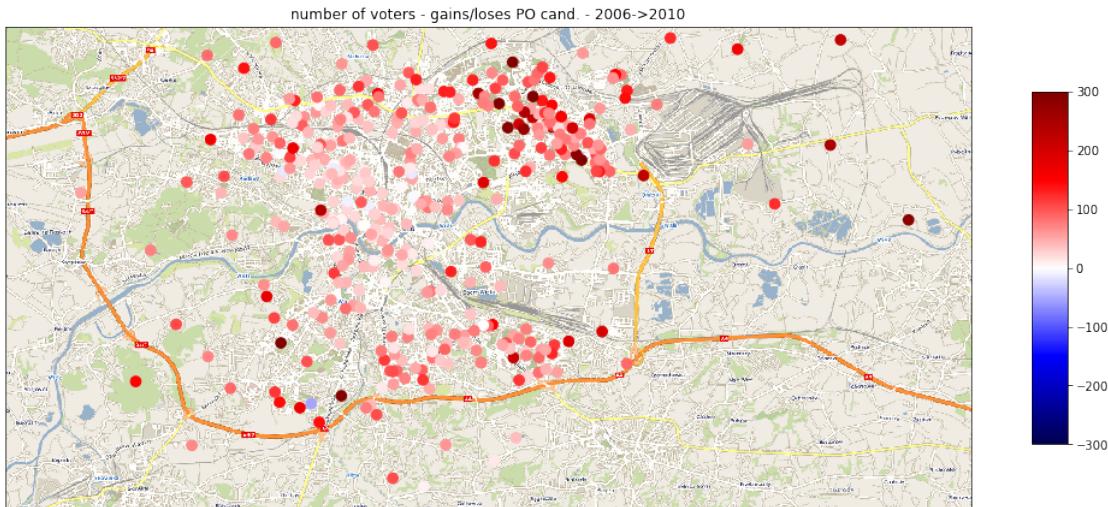
```
In [38]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2006_10pr['lon'].tolist(), gains_lose_pres2006_10pr['lat'].tolist()
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PO cand. - 2006->2010")
```

Out[38]: <matplotlib.text.Text at 0xda8f710>



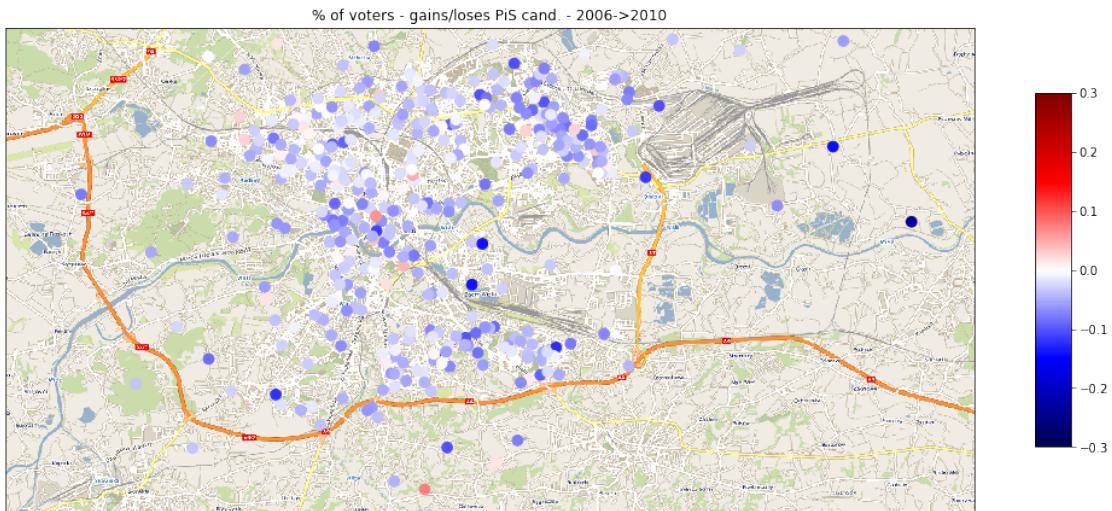
```
In [39]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2006_10['lon'].tolist(), gains_lose_pres2006_10['lat'].tolist()
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of voters - gains/loses PO cand. - 2006->2010")
```

Out[39]: <matplotlib.text.Text at 0xdb82d68>



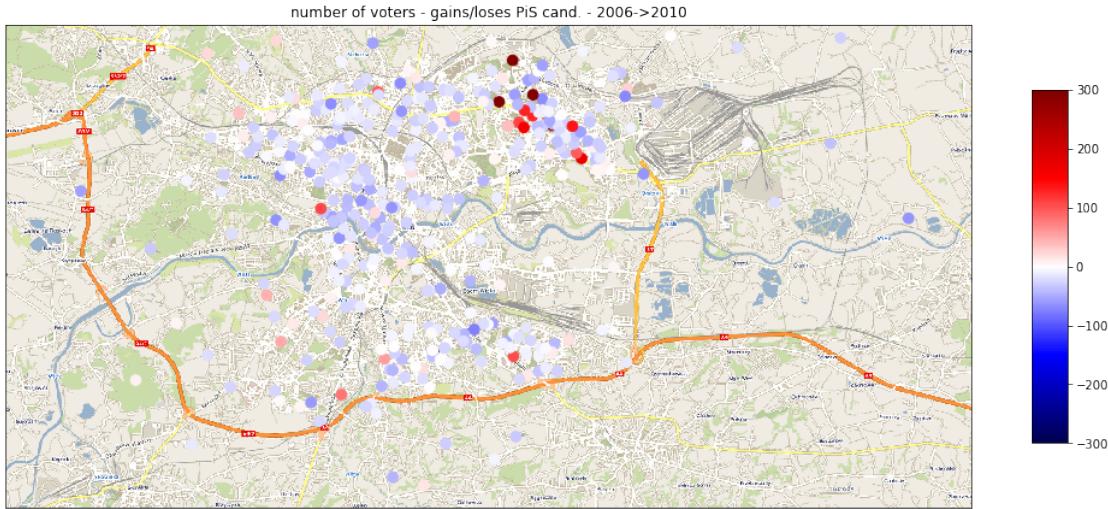
```
In [40]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2006_10pr['lon'].tolist(), gains_lose_pres2006_10pr['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PiS cand. - 2006->2010")
```

Out[40]: <matplotlib.text.Text at 0xe00f5f8>



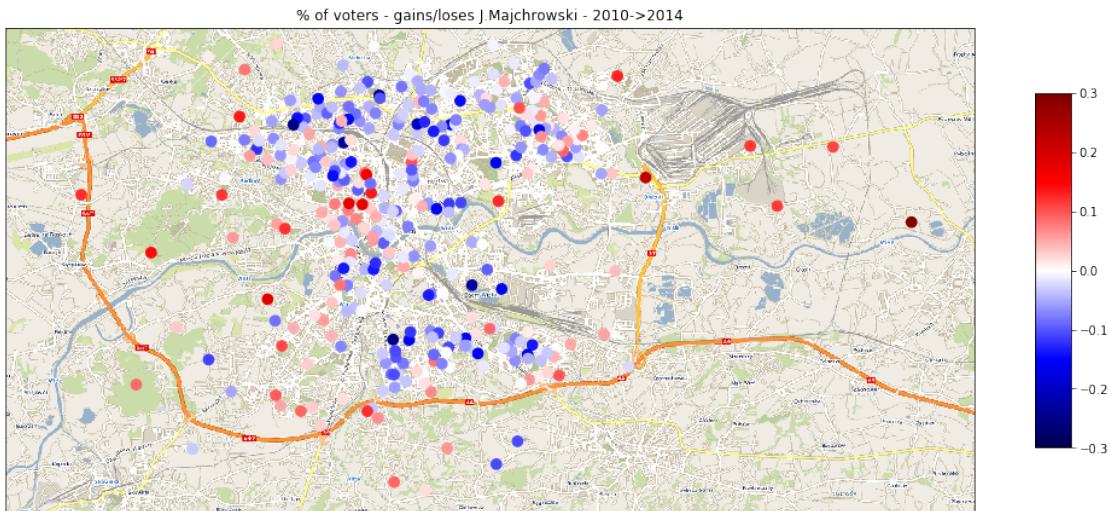
```
In [41]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2006_10['lon'].tolist(), gains_lose_pres2006_10['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of voters - gains/loses PiS cand. - 2006->2010")
```

Out[41]: <matplotlib.text.Text at 0xe449d68>



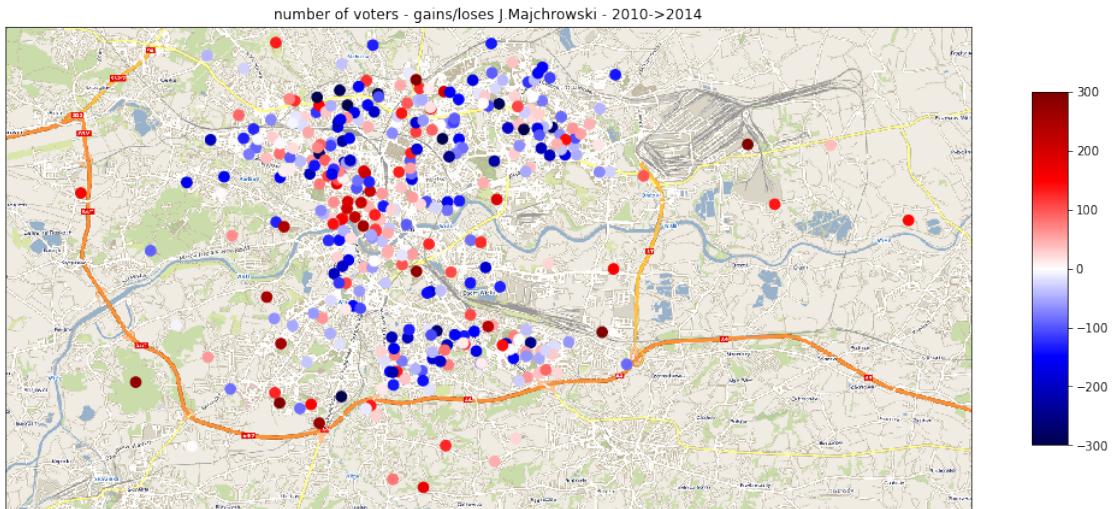
```
In [42]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14pr['lon'].tolist(), gains_lose_pres2010_14pr['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000, )
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses J. Majchrowski - 2010->2014")
```

Out [42]: <matplotlib.text.Text at 0xf536400>



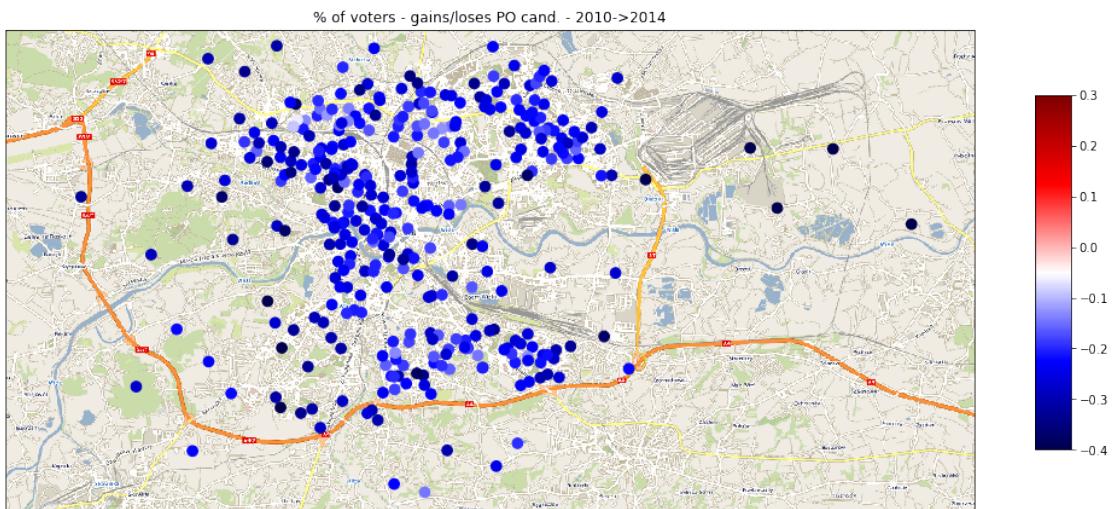
```
In [43]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14['lon'].tolist(), gains_lose_pres2010_14['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000, )
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of voters - gains/loses J. Majchrowski - 2010->2014")
```

```
Out[43]: <matplotlib.text.Text at 0xf9b0b38>
```



```
In [56]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14pr['lon'].tolist(), gains_lose_pres2010_14pr['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000, z=10)
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PO cand. - 2010->2014")
```

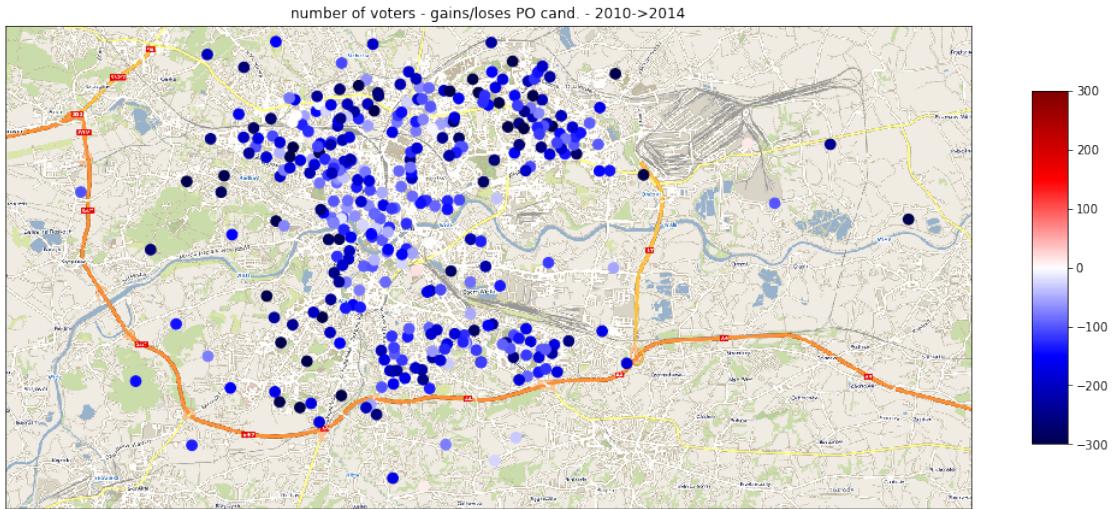
```
Out[56]: <matplotlib.text.Text at 0xc84b978>
```



```
In [47]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14['lon'].tolist(), gains_lose_pres2010_14['lat'].list()
```

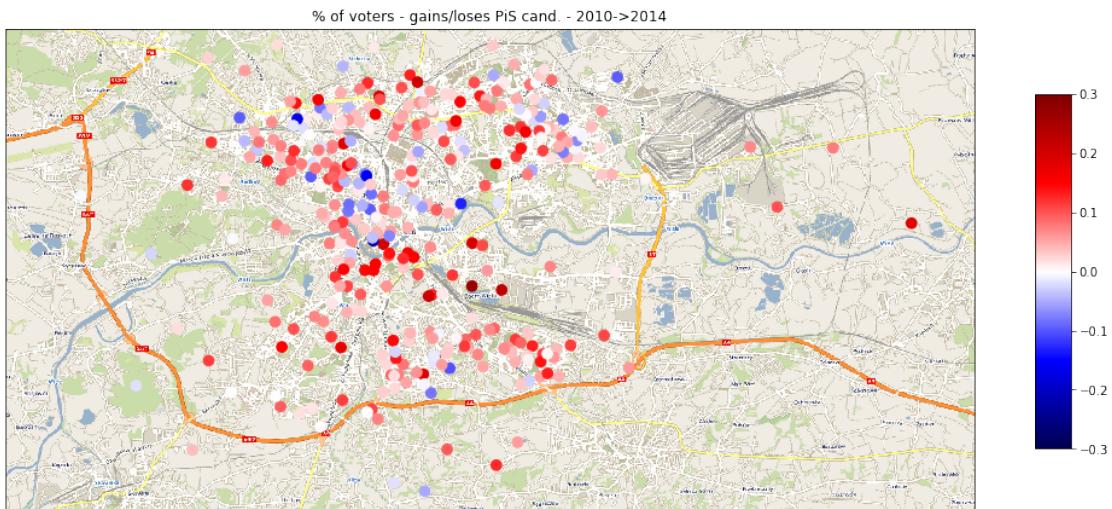
```
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of voters - gains/loses PO cand. - 2010->2014")
```

Out [47]: <matplotlib.text.Text at 0x175ad7f0>



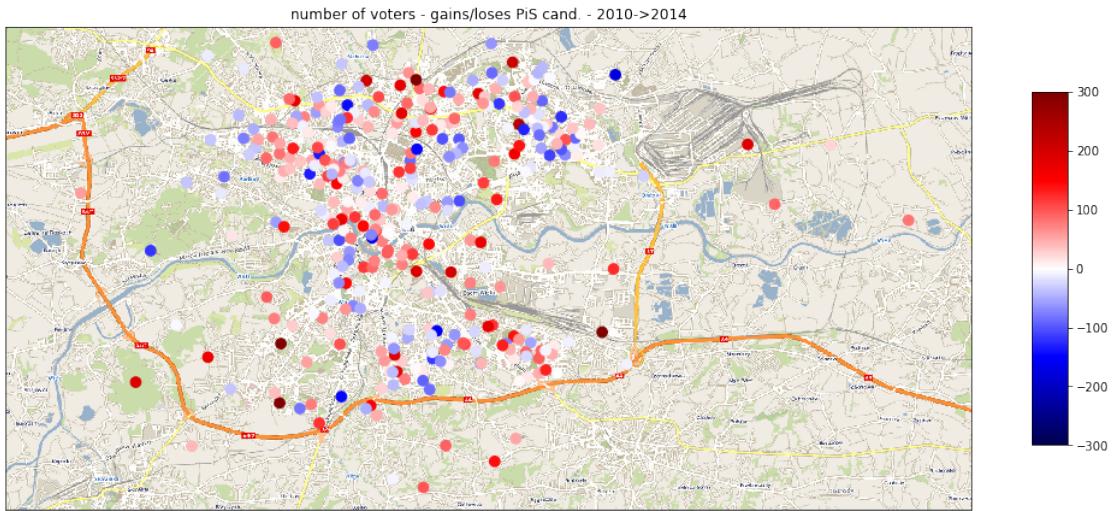
```
In [48]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14pr['lon'].tolist(), gains_lose_pres2010_14pr['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% of voters - gains/loses PiS cand. - 2010->2014")
```

Out [48]: <matplotlib.text.Text at 0x17836eb8>



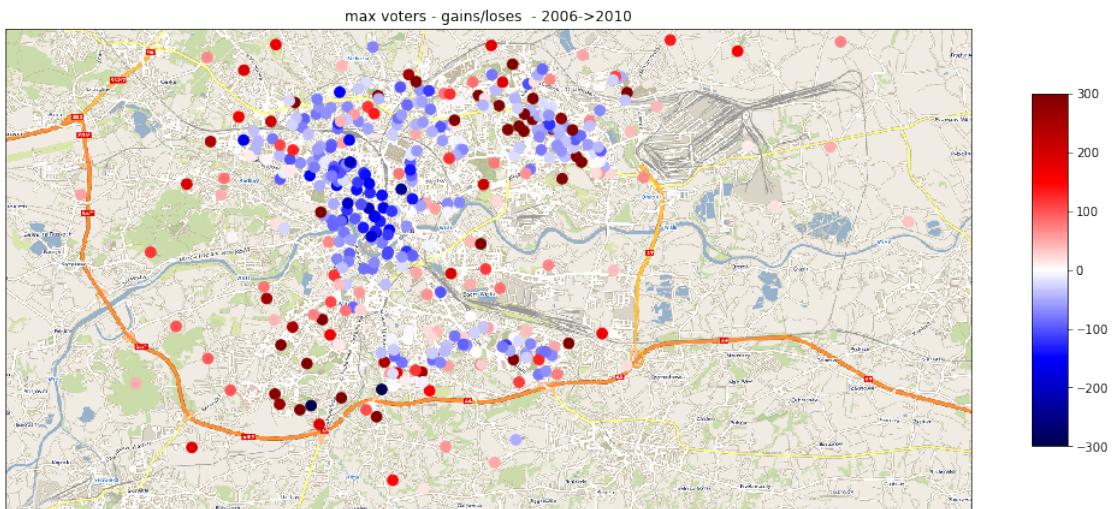
```
In [49]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14['lon'].tolist(), gains_lose_pres2010_14['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("number of voters - gains/loses PiS cand. - 2010->2014")
```

Out[49]: <matplotlib.text.Text at 0x17ac66a0>



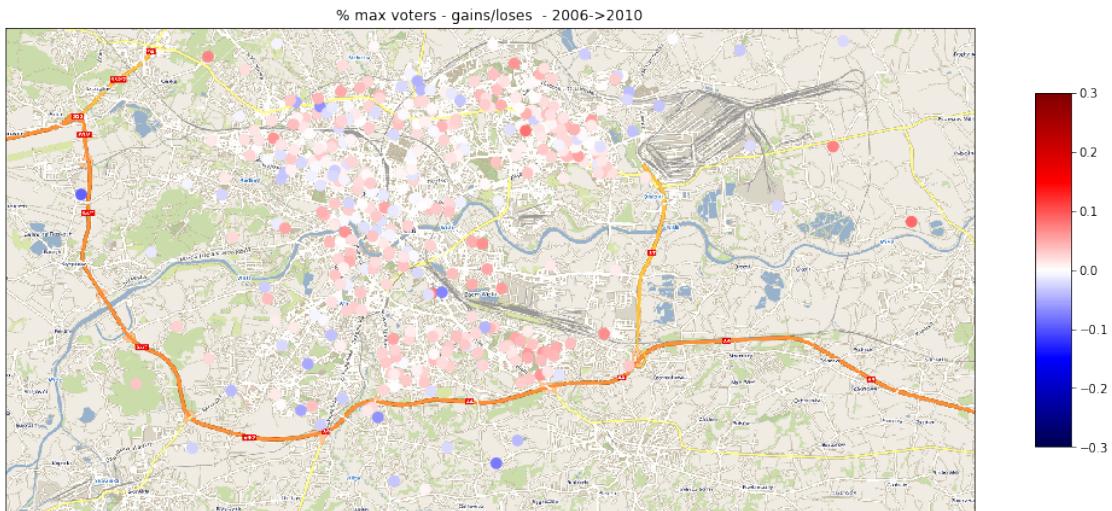
```
In [50]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2006_10['lon'].tolist(), gains_lose_pres2006_10['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("max voters - gains/loses - 2006->2010")
```

Out[50]: <matplotlib.text.Text at 0x17bbcd30>



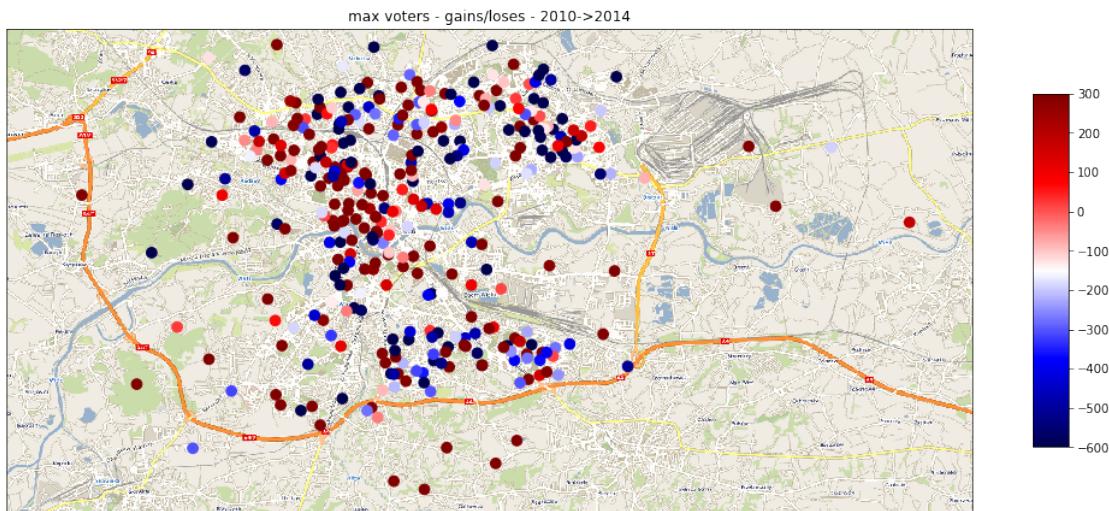
```
In [54]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2006_10pr['lon'].tolist(), gains_lose_pres2006_10pr['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000, zoom=10)
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% max voters - gains/loses - 2006->2010")
```

Out[54]: <matplotlib.text.Text at 0x1a6bc6a0>



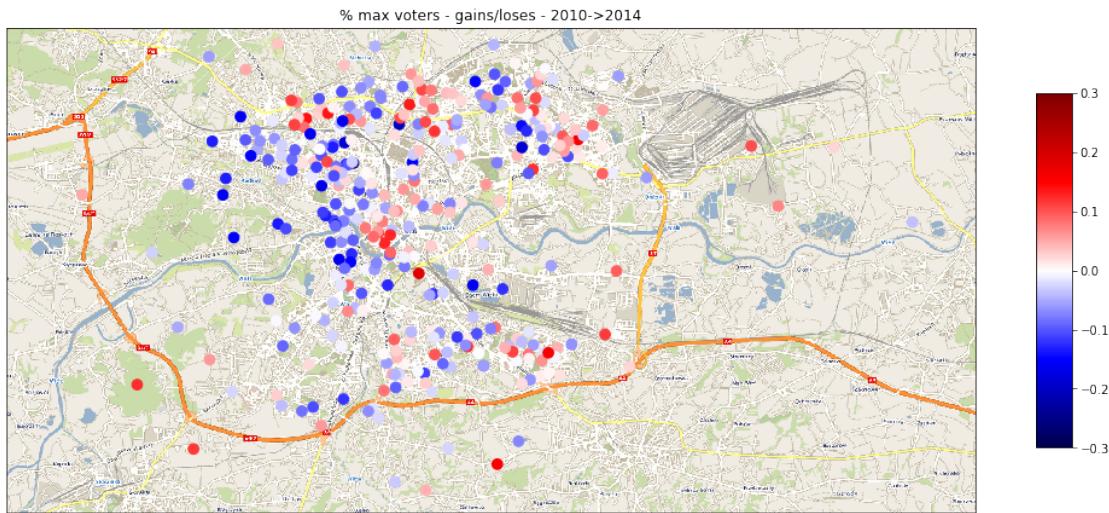
```
In [51]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14['lon'].tolist(), gains_lose_pres2010_14['lat'].tolist())
krk_map.wmsimage('http://ows.terrestris.de/osm/service?', xpixels=1000, ypixels=1000, zoom=10)
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("max voters - gains/loses - 2010->2014")
```

Out[51]: <matplotlib.text.Text at 0x1a41d4a8>



```
In [55]: plt.figure(figsize=(18,18))
krk_map.scatter(gains_lose_pres2010_14pr['lon'].tolist(), gains_lose_pres2010_14pr['lat'].tolist(),
krk_map.wmsimage('http://ows.terrestris.de/osm/service?',xpixels=1000, ypixels=1000,
plt.colorbar(shrink=.3, pad=.05, aspect=10)
plt.title("% max voters - gains/loses - 2010->2014")
```

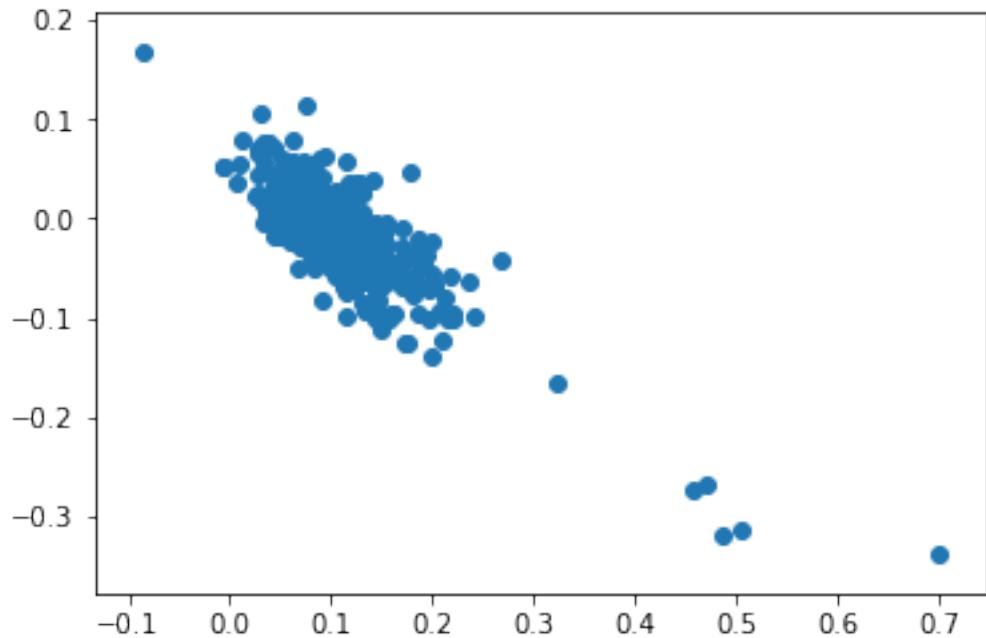
```
Out[55]: <matplotlib.text.Text at 0xf589e80>
```



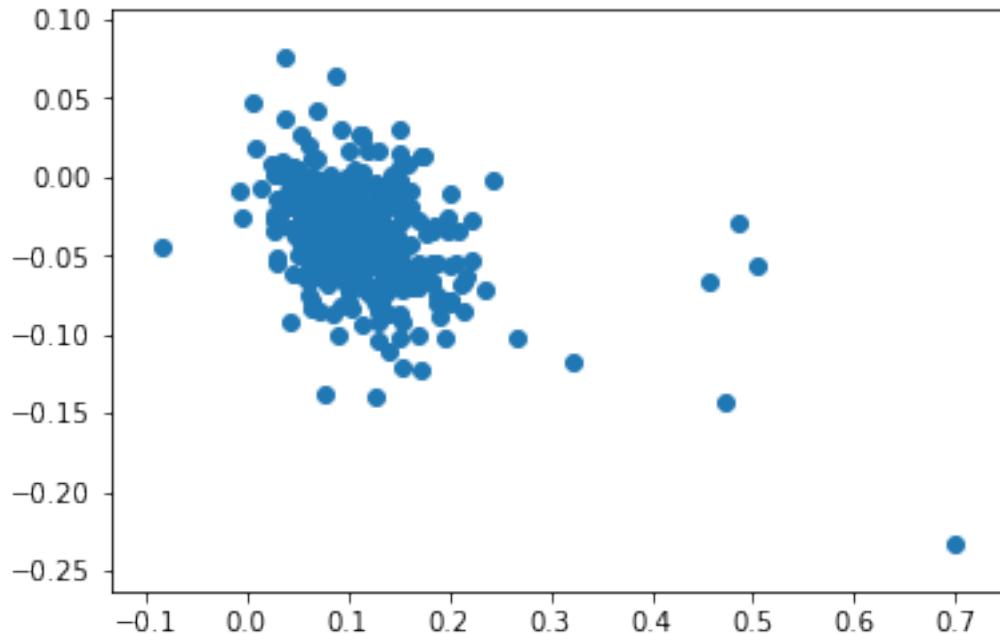
```
In [35]: scipy.stats.pearsonr(gains_lose_pres2006_10pr['po'],gains_lose_pres2006_10pr['max_vot'])
```

```
Out[35]: (0.031499266549042691, 0.53511436232585585)
```

```
In [36]: scipy.stats.pearsonr(gains_lose_pres2006_10pr['po'],gains_lose_pres2006_10pr['majchrowski'])  
Out[36]: (-0.8388125075169145, 1.6813439887522058e-104)  
  
In [39]: plt.scatter(gains_lose_pres2006_10pr['po'],gains_lose_pres2006_10pr['majchrowski'])  
Out[39]: <matplotlib.collections.PathCollection at 0x10cf6cc0>
```



```
In [37]: scipy.stats.pearsonr(gains_lose_pres2006_10pr['po'],gains_lose_pres2006_10pr['pis'])  
Out[37]: (-0.4305574083378324, 4.9404449067953452e-19)  
  
In [40]: plt.scatter(gains_lose_pres2006_10pr['po'],gains_lose_pres2006_10pr['pis'])  
Out[40]: <matplotlib.collections.PathCollection at 0x10d9ba20>
```



```
In [38]: scipy.stats.pearsonr(gains_lose_pres2006_10pr['majchrowski'],gains_lose_pres2006_10pr['po'])

Out[38]: (0.030535744563133026, 0.54768200774222553)

In [41]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['po'],gains_lose_pres2010_14pr['max_vote'])

Out[41]: (0.17842879827999789, 0.00069516393284102919)

In [42]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['po'],gains_lose_pres2010_14pr['pis'])

Out[42]: (-0.37715327942574683, 1.5172487343756825e-13)

In [43]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['po'],gains_lose_pres2010_14pr['majchrowski'])

Out[43]: (-0.5709529395444175, 2.3429305120835703e-32)

In [57]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['lewica'],gains_lose_pres2010_14pr['majchrowski'])

Out[57]: (-0.14313010843269305, 0.0066745968502533778)

In [44]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['po'],gains_lose_pres2010_14pr['gibalal'])

Out[44]: (-0.079220635194921618, 0.13464459707363721)

In [47]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['po'],gains_lose_pres2010_14pr['lewica'])

Out[47]: (0.1304551067000968, 0.013501515146435408)
```

```

In [53]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['po'],gains_lose_pres2010_14pr['inni'])
Out[53]: (0.11080401404640845, 0.036114552834029798)

In [58]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['po'],gains_lose_pres2010_14pr['berkowi'])
Out[58]: (-0.024998672013579276, 0.63734328760691339)

In [48]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['majchrowski'],gains_lose_pres2010_14pr['max_voters'])
Out[48]: (-0.10987493101348024, 0.037713415812597517)

In [49]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['max_voters'],gains_lose_pres2010_14pr['pis'])
Out[49]: (-0.10788518566554624, 0.041340106651104748)

In [50]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['pis'],gains_lose_pres2010_14pr['gibal'])
Out[50]: (-0.21769719834760465, 3.25925249672221e-05)

In [51]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['inni'],gains_lose_pres2010_14pr['gibal'])
Out[51]: (0.097170582528387756, 0.066287894861086785)

In [54]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['inni'],gains_lose_pres2010_14pr['lewica'])
Out[54]: (0.23606098709300621, 6.3367883966607466e-06)

In [55]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['majchrowski'],gains_lose_pres2010_14pr['max_voters'])
Out[55]: (-0.14313010843269305, 0.0066745968502533778)

In [56]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['pis'],gains_lose_pres2010_14pr['lewica'])
Out[56]: (-0.35978981777694025, 2.2153842185161624e-12)

In [57]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['max_voters'],gains_lose_pres2010_14pr['gibal'])
Out[57]: (0.22707917634179051, 1.4357708505368849e-05)

In [59]: scipy.stats.pearsonr(gains_lose_pres2010_14pr['max_voters'],gains_lose_pres2010_14pr['po'])
Out[59]: (-0.080378335995102856, 0.12902252601875705)

```

1. W wyborach 2010r. w stosunku do 2006r. kandydat PO zyska w caym micie, najmocniej w NH, wschodnich obrzezch miasat. ruczaju. natomiast w wyborach 2014r. w stosunku do 2010r stracia wszdzie. najmocniej na zachodzie miasta oraz wschodnich obrzezach.
2. W latach 2006-2010 kandydat PiS straci w caym micie z wyjątkiem kilku obwodów, w wyborach 2014r. w stosunku do 2010r kandydat PiS zyska prawie w caym micie z wyjątkiem niektórych obwodów winnych czeciach maista gownie (bronowice, Dbniki, Wieczysta, NH)
3. J. Majchrowski w wyborach 2010r. w stosunku do 2006r stracia poparcie gownie na wschodzie miasta w tym w NH, W pozostajej czesci miasta przewanie nieznacznie zyskiwa poaprcie. W wyborach 2014r. w stosunku do 2010r poparcie dla J. Majchrowskiego wzroso na wschodzie miasta, takze w Centrum, rodkowo-zach. czci maista (Wola, przegorzay) natomiast spado w wikszej czci NH oraz w poudniowych i pólnocnych osiedlach.
4. W wyborach 2010r. w stosunku do 2006r frekwncja zwikszy si nieznacznie niemal w caym mowie, natomiast w wyborach 2014r. w stosunku do 2010r spada, poza czscia Nowej Huty, Kazimierzem, i okolicami Azorów oraz Prdkiem Cz.

### 1.3 Charakterystyka obwodów

Analiza obwodów z największym/najmniejszym poparciem dla poszczególnych kandydatów/komitetów

#### 1.3.1 rok 2006

##### wybory do rady miasta

```
In [86]: #po  
df_res_rada2006.sort_values("po_proc").tail(20)
```

```
Out[86]:
```

nr_obwodu	year	majchrowski	po	pis	gibal	lewica	berkowicz	inni	\
159	2006	41	268	126	0	34	0	49	
241	2006	41	258	122	0	19	0	47	
165	2006	81	533	249	0	55	0	81	
181	2006	31	340	132	0	28	0	106	
267	2006	33	307	161	0	43	0	30	
81	2006	28	328	190	0	22	0	35	
82	2006	29	247	65	0	42	0	70	
166	2006	19	154	70	0	8	0	31	
169	2006	109	501	174	0	40	0	91	
117	2006	32	220	91	0	23	0	33	
115	2006	81	374	90	0	60	0	72	
233	2006	37	232	72	0	31	0	45	
97	2006	68	598	231	0	71	0	101	
173	2006	76	444	157	0	41	0	73	
114	2006	50	257	69	0	18	0	58	
243	2006	23	367	171	0	23	0	43	
244	2006	21	272	126	0	11	0	33	
367	2006	12	164	65	0	2	0	14	
242	2006	46	429	133	0	26	0	35	
170	2006	86	749	168	0	39	0	69	

nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc	\
159	1053	518	0.079151	0.517375	0.243243	
241	1795	487	0.084189	0.529774	0.250513	
165	1735	999	0.081081	0.533534	0.249249	
181	1469	637	0.048666	0.533752	0.207221	
267	1318	574	0.057491	0.534843	0.280488	
81	1421	603	0.046434	0.543947	0.315091	
82	932	453	0.064018	0.545254	0.143488	
166	621	282	0.067376	0.546099	0.248227	
169	2026	915	0.119126	0.547541	0.190164	
117	827	399	0.080201	0.551378	0.228070	
115	1555	677	0.119645	0.552437	0.132939	
233	915	417	0.088729	0.556355	0.172662	

97	2078	1069	0.063611	0.559401	0.216090
173	1794	791	0.096081	0.561315	0.198483
114	1331	452	0.110619	0.568584	0.152655
243	1353	627	0.036683	0.585327	0.272727
244	1041	463	0.045356	0.587473	0.272138
367	552	257	0.046693	0.638132	0.252918
242	1737	669	0.068759	0.641256	0.198804
170	2269	1111	0.077408	0.674167	0.151215

nr_obwodu	gibal_proc	lewica_proc	berkowicz_proc	inni_proc	\
159	0.0	0.065637		0.0	0.094595
241	0.0	0.039014		0.0	0.096509
165	0.0	0.055055		0.0	0.081081
181	0.0	0.043956		0.0	0.166405
267	0.0	0.074913		0.0	0.052265
81	0.0	0.036484		0.0	0.058043
82	0.0	0.092715		0.0	0.154525
166	0.0	0.028369		0.0	0.109929
169	0.0	0.043716		0.0	0.099454
117	0.0	0.057644		0.0	0.082707
115	0.0	0.088626		0.0	0.106352
233	0.0	0.074341		0.0	0.107914
97	0.0	0.066417		0.0	0.094481
173	0.0	0.051833		0.0	0.092288
114	0.0	0.039823		0.0	0.128319
243	0.0	0.036683		0.0	0.068581
244	0.0	0.023758		0.0	0.071274
367	0.0	0.007782		0.0	0.054475
242	0.0	0.038864		0.0	0.052317
170	0.0	0.035104		0.0	0.062106

nr_obwodu	granice	lat	\
159	faata 2, 2 a, 2 b, filarecka, kraszewskiego n...	50.057077	
241	agatowa, ametystowa, domagay, magazynowa 5, n...	50.020784	
165	aleja maeckiego, doktora kudliskiego, doktor...	50.054774	
181	baanki, wikowa, ekielskiego, harasymowicza,...	50.032507	
267	andrusikiewicza, bielskiego, bieanowska niepa...	50.022910	
81	budrysów, dziewanny, margaretek, na polach, na...	50.100623	
82	biskupa gawliny, chemoskiego od 74, chmurna,...	50.090821	
166	aleja waszyngtona, anczyca, benedyktowicza, bi...	50.053343	
169	anusia, babinicza, billewiczów, braci kiemliczó...	50.000973	
117	armii krajowej nieparzyste od 5 do 53,bakaarz...	50.069896	
115	aleja 29 listopada od 161 do 214, 226, arcybis...	50.096582	
233	turniejowa nieparzyste od 59 i parzyste od 60 ...	50.010590	
97	bobrzeckiej, gboka, frycza-modrzewskiego, ja...	50.087214	
173	bugarska, dereniowa, kobierzyska nieparzyste...	50.026006	

```

114      kunicy kotajowskiej parzyste od 18 i niepa... 50.098701
243      bierkowskiego, bieanowska parzyste od 234 do ... 50.008823
244      bieanowska parzyste od 250, bogucicka, braci ... 50.017980
367      kleinera, kocmyrzowska parzyste od 2 do 6, nie... 50.080783
242      czarnochowicka, flanka, gerberowa, grzecha, ha... 50.011101
170      chmieleniec, czerwone maki 55,69,71,73,82,84, ... 50.018611

```

	lon
nr_obwodu	
159	19.918817
241	20.046929
165	19.896836
181	19.892064
267	19.994224
81	19.882792
82	19.906140
166	19.900454
169	19.897460
117	19.900726
115	19.962448
233	19.960425
97	19.942826
173	19.917659
114	19.959030
243	20.025903
244	20.031401
367	20.061481
242	20.058091
170	19.898372

In [97]: df\_res\_rada2006.sort\_values("po\_proc").head(20)

Out[97]:

	year	majchrowski	po	pis	gibalala	lewica	berkowicz	inni	\
nr_obwodu									
452	2006	1	0	22	0	0	0	2	
451	2006	0	0	25	0	0	0	5	
450	2006	1	2	3	0	0	0	15	
285	2006	57	45	97	0	23	0	60	
176	2006	152	101	297	0	17	0	61	
203	2006	40	44	83	0	22	0	69	
387	2006	41	73	110	0	45	0	100	
177	2006	54	80	232	0	5	0	27	
179	2006	55	131	239	0	10	0	187	
213	2006	72	160	214	0	17	0	288	
207	2006	143	175	300	0	32	0	127	
412	2006	25	69	108	0	26	0	71	
206	2006	34	37	61	0	4	0	23	
360	2006	20	45	89	0	15	0	24	

180	2006	139	117	130	0	31	0	81
284	2006	122	87	76	0	14	0	67
384	2006	71	130	153	0	45	0	141
369	2006	37	74	133	0	27	0	36
280	2006	130	106	129	0	10	0	64
282	2006	138	91	93	0	7	0	44

nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc	\
452	32	25	0.040000	0.000000	0.880000	
451	30	30	0.000000	0.000000	0.833333	
450	34	21	0.047619	0.095238	0.142857	
285	1031	282	0.202128	0.159574	0.343972	
176	1665	628	0.242038	0.160828	0.472930	
203	630	258	0.155039	0.170543	0.321705	
387	1148	369	0.111111	0.197832	0.298103	
177	1123	398	0.135678	0.201005	0.582915	
179	2085	622	0.088424	0.210611	0.384244	
213	1865	751	0.095872	0.213049	0.284953	
207	2183	777	0.184041	0.225225	0.386100	
412	908	299	0.083612	0.230769	0.361204	
206	568	159	0.213836	0.232704	0.383648	
360	546	193	0.103627	0.233161	0.461140	
180	1302	498	0.279116	0.234940	0.261044	
284	1035	366	0.333333	0.237705	0.207650	
384	1622	540	0.131481	0.240741	0.283333	
369	996	307	0.120521	0.241042	0.433225	
280	1107	439	0.296128	0.241458	0.293850	
282	862	373	0.369973	0.243968	0.249330	

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
452	0.0	0.000000		0.0	0.080000
451	0.0	0.000000		0.0	0.166667
450	0.0	0.000000		0.0	0.714286
285	0.0	0.081560		0.0	0.212766
176	0.0	0.027070		0.0	0.097134
203	0.0	0.085271		0.0	0.267442
387	0.0	0.121951		0.0	0.271003
177	0.0	0.012563		0.0	0.067839
179	0.0	0.016077		0.0	0.300643
213	0.0	0.022636		0.0	0.383489
207	0.0	0.041184		0.0	0.163449
412	0.0	0.086957		0.0	0.237458
206	0.0	0.025157		0.0	0.144654
360	0.0	0.077720		0.0	0.124352
180	0.0	0.062249		0.0	0.162651
284	0.0	0.038251		0.0	0.183060

384	0.0	0.083333	0.0	0.261111		
369	0.0	0.087948	0.0	0.117264		
280	0.0	0.022779	0.0	0.145786		
282	0.0	0.018767	0.0	0.117962		
			granice		lat	\
nr_obwodu						
452	dom pomocy spoecznej kraków os. hutnicze 5	50.073506				
451	dom pomocy spoecznej os. szkolne 28	50.077136				
450	dom pomocy spoecznej kraków os. sportowe 9	50.081063				
285	bartników, pukownika barty, bugaj, czeczotta,...	50.039525				
176	baczyskiego, balanówka, brcknera, dobrowolsk...	50.005296				
203	barycka, bednarska, blacharska, gacki, gsioro...	49.989468				
387	osiedle willowe od 1 do 37, plac oaskiego	50.072057				
177	batalionów chapskich, braterstwa bronii, czwar...	50.014818				
179	bagienna, benedyktyska, bogucianka, bolesawa...	50.007643				
213	chorzowska, dbskiego, dzikiej róy, inicjatyw...	49.994820				
207	aleksandrowicza, bogdanowskiego, chaubiskieg...	49.977888				
412	bartnicza, betonowa, biwakowa, brzeska, droys...	50.052665				
206	goba, lei, matematyków krakowskich parzyste ...	49.975316				
360	osiedle przy arce od 20 do 26, batalionu "para...	50.081658				
180	brzask, bobrowa, bodzowska, bojanówka, dbrowa...	50.024508				
284	agawy, albatrosów, botewa, golikówka nieparzys...	50.041362				
384	cerchów, osiedle modoci od 1 do 15 (bez 9, 1...	50.068424				
369	osiedle na wzgórzach od 11 do 13 a, od 28 do 35	50.035794				
280	gumniska, ksida stoszki, lasówka, myliwska ...	50.047983				
282	batki, goszczyskiego, iowa, kacza, kolejowa ...	50.035920				
	lon					
nr_obwodu						
452	20.046511					
451	20.048637					
450	20.045561					
285	20.052604					
176	19.874792					
203	20.006368					
387	20.046928					
177	19.864569					
179	19.831080					
213	19.915663					
207	19.949299					
412	20.189343					
206	19.963397					
360	20.028098					
180	19.850062					
284	20.022525					
384	20.046690					
369	19.892511					

```
280      19.991390
282      19.986324
```

In [106]: #pis  
df\_res\_rada2006.sort\_values("pis\_proc").tail(20)

Out[106]:

nr_obwodu	year	majchrowski	po	pis	gibalala	lewica	berkowicz	inni
21	2006	48	220	264	0	41	0	59
365	2006	44	212	292	0	31	0	120
10	2006	28	155	187	0	28	0	49
343	2006	22	127	149	0	25	0	33
354	2006	47	159	232	0	46	0	70
204	2006	22	63	95	0	8	0	35
178	2006	58	158	239	0	15	0	91
30	2006	31	192	257	0	40	0	80
350	2006	26	77	118	0	14	0	40
344	2006	29	112	167	0	24	0	57
332	2006	44	155	251	0	78	0	54
369	2006	37	74	133	0	27	0	36
327	2006	64	137	236	0	43	0	59
208	2006	70	183	279	0	17	0	75
333	2006	39	108	198	0	34	0	51
360	2006	20	45	89	0	15	0	24
176	2006	152	101	297	0	17	0	61
177	2006	54	80	232	0	5	0	27
451	2006	0	0	25	0	0	0	5
452	2006	1	0	22	0	0	0	2

nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc
21	1354	632	0.075949	0.348101	0.417722
365	2001	699	0.062947	0.303290	0.417740
10	1056	447	0.062640	0.346756	0.418345
343	1124	356	0.061798	0.356742	0.418539
354	1469	554	0.084838	0.287004	0.418773
204	606	223	0.098655	0.282511	0.426009
178	1561	561	0.103387	0.281640	0.426025
30	1266	600	0.051667	0.320000	0.428333
350	1050	275	0.094545	0.280000	0.429091
344	1329	389	0.074550	0.287918	0.429306
332	1566	582	0.075601	0.266323	0.431271
369	996	307	0.120521	0.241042	0.433225
327	1715	539	0.118738	0.254174	0.437848
208	1538	624	0.112179	0.293269	0.447115
333	1198	430	0.090698	0.251163	0.460465
360	546	193	0.103627	0.233161	0.461140
176	1665	628	0.242038	0.160828	0.472930

177	1123	398	0.135678	0.201005	0.582915
451	30	30	0.000000	0.000000	0.833333
452	32	25	0.040000	0.000000	0.880000

nr_obwodu	gibalal_proc	lewica_proc	berkowicz_proc	inni_proc	\
21	0.0	0.064873		0.0	0.093354
365	0.0	0.044349		0.0	0.171674
10	0.0	0.062640		0.0	0.109620
343	0.0	0.070225		0.0	0.092697
354	0.0	0.083032		0.0	0.126354
204	0.0	0.035874		0.0	0.156951
178	0.0	0.026738		0.0	0.162210
30	0.0	0.066667		0.0	0.133333
350	0.0	0.050909		0.0	0.145455
344	0.0	0.061697		0.0	0.146530
332	0.0	0.134021		0.0	0.092784
369	0.0	0.087948		0.0	0.117264
327	0.0	0.079777		0.0	0.109462
208	0.0	0.027244		0.0	0.120192
333	0.0	0.079070		0.0	0.118605
360	0.0	0.077720		0.0	0.124352
176	0.0	0.027070		0.0	0.097134
177	0.0	0.012563		0.0	0.067839
451	0.0	0.000000		0.0	0.166667
452	0.0	0.000000		0.0	0.080000

nr_obwodu	granice	lat	\
21	czapskich, garncarska parzyste od 2 do 26, jab...	50.060615	
365	osiedle kazimierzowskie od 1 do 15, spytka z m...	50.083328	
10	dominikaska, franciszka 2 i 4, grodzka ni...	50.059047	
343	osiedle na lotnisku 1, 2, 4, 6, od 19 do 21	50.085842	
354	osiedle albertyskie od 12 do 21	50.082072	
204	berdyczowska, chanieckiej, drubackiej, geolog...	49.982776	
178	botniska, chlebiczna, dziaowskiego, hollendr...	49.988380	
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068988	
350	osiedle kalinowe od 12 do 17	50.092453	
344	osiedle na lotnisku 3, od 7 do 18 a, króla	50.087455	
332	osiedle bohaterów wrzenia od 26 do 38	50.098516	
369	osiedle na wzgórzach od 11 do 13 a, od 28 do 35	50.035794	
327	osiedle bohaterów wrzenia od 57 do 81	50.101395	
208	babiego lata, borowinowa (bez 77), chaubiski...	49.998946	
333	osiedle bohaterów wrzenia od 39 do 55	50.098955	
360	osiedle przy arce od 20 do 26, batalionu "para...	50.081658	
176	baczyskiego, balanówka, brcknera, dobrowolsk...	50.005296	
177	batalionów chopskich, braterstwa bronii, czwar...	50.014818	
451	dom pomocy spoecznej os. szkolne 28	50.077136	

452 dom pomocy spoecznej kraków os. hutnicze 5 50.073506

	lon
nr_obwodu	
21	19.930117
365	20.023985
10	19.939749
343	20.018992
354	20.021147
204	19.996449
178	19.856683
30	19.938370
350	20.014984
344	20.015234
332	20.012297
369	19.892511
327	20.007223
208	19.937390
333	20.010060
360	20.028098
176	19.874792
177	19.864569
451	20.048637
452	20.046511

In [107]: df\_res\_rada2006.sort\_values("pis\_proc").head(20)

Out[107]:

	year	majchrowski	po	pis	gibalala	lewica	berkowicz	inni	\
nr_obwodu									
115	2006	81	374	90	0	60	0	72	
197	2006	191	415	147	0	53	0	247	
450	2006	1	2	3	0	0	0	15	
82	2006	29	247	65	0	42	0	70	
170	2006	86	749	168	0	39	0	69	
114	2006	50	257	69	0	18	0	58	
131	2006	86	267	100	0	61	0	88	
88	2006	71	385	128	0	81	0	105	
233	2006	37	232	72	0	31	0	45	
34	2006	40	329	116	0	86	0	86	
105	2006	132	301	161	0	154	0	127	
196	2006	133	166	86	0	19	0	63	
23	2006	40	157	63	0	41	0	36	
172	2006	88	255	107	0	46	0	69	
195	2006	89	209	108	0	31	0	132	
169	2006	109	501	174	0	40	0	91	
113	2006	34	225	99	0	28	0	129	
184	2006	139	267	124	0	43	0	69	
139	2006	80	271	128	0	81	0	99	

130	2006	42	187	76	0	35	0	51
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nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc	\
115	1555	677	0.119645	0.552437	0.132939	
197	2307	1053	0.181387	0.394112	0.139601	
450	34	21	0.047619	0.095238	0.142857	
82	932	453	0.064018	0.545254	0.143488	
170	2269	1111	0.077408	0.674167	0.151215	
114	1331	452	0.110619	0.568584	0.152655	
131	1204	602	0.142857	0.443522	0.166113	
88	1778	770	0.092208	0.500000	0.166234	
233	915	417	0.088729	0.556355	0.172662	
34	1371	657	0.060883	0.500761	0.176560	
105	2096	875	0.150857	0.344000	0.184000	
196	1132	467	0.284797	0.355460	0.184154	
23	709	337	0.118694	0.465875	0.186944	
172	1323	565	0.155752	0.451327	0.189381	
195	1210	569	0.156415	0.367311	0.189807	
169	2026	915	0.119126	0.547541	0.190164	
113	1224	515	0.066019	0.436893	0.192233	
184	1526	642	0.216511	0.415888	0.193146	
139	1352	659	0.121396	0.411229	0.194234	
130	892	391	0.107417	0.478261	0.194373	

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
115	0.0	0.088626	0.0	0.106352	
197	0.0	0.050332	0.0	0.234568	
450	0.0	0.000000	0.0	0.714286	
82	0.0	0.092715	0.0	0.154525	
170	0.0	0.035104	0.0	0.062106	
114	0.0	0.039823	0.0	0.128319	
131	0.0	0.101329	0.0	0.146179	
88	0.0	0.105195	0.0	0.136364	
233	0.0	0.074341	0.0	0.107914	
34	0.0	0.130898	0.0	0.130898	
105	0.0	0.176000	0.0	0.145143	
196	0.0	0.040685	0.0	0.134904	
23	0.0	0.121662	0.0	0.106825	
172	0.0	0.081416	0.0	0.122124	
195	0.0	0.054482	0.0	0.231986	
169	0.0	0.043716	0.0	0.099454	
113	0.0	0.054369	0.0	0.250485	
184	0.0	0.066978	0.0	0.107477	
139	0.0	0.122914	0.0	0.150228	
130	0.0	0.089514	0.0	0.130435	

		granice	lat \
nr_obwodu			
115	aleja 29 listopada od 161 do 214, 226, arcybis...	50.096582	
197	borkowskie bonia, cesarza, doktora uczyskie...	50.012965	
450	dom pomocy spoecznej kraków os. sportowe 9	50.081063	
82	biskupa gawliny, chemoskiego od 74, chmurna,...	50.090821	
170	chmieleniec, czerwone maki 55,69,71,73,82,84, ...	50.018611	
114	kunicy kotajowskiej parzyste od 18 i niepa...	50.098701	
131	józefitów od 14 do 21, konarskiego od 39 do 54...	50.070296	
88	podkowiskiego, radzikowskiego eljasza parzyst...	50.085267	
233	turniejowa nieparzyste od 59 i parzyste od 60 ...	50.010590	
34	aleja pk. beliny-pramowskiego nieparzyste od...	50.066984	
105	bliska, bukietowa, jordanowska, na chaupkach,...	50.091728	
196	chodna, kociuszkowców, kowalska, krochmalnik...	50.018230	
23	aleja mickiewicza nieparzyste od 41 do 63, gra...	50.067184	
172	drukarska, gutenberga, jahody, profesora wini...	50.023894	
195	dekarzy, falowa, gajowa, goplana, huculska, ir...	50.021442	
169	anusi, babinicza, billewiczów, braci kiemliczó...	50.000973	
113	arsena, banacha, belwederczyków, bibicka, do...	50.104572	
184	ceglarska, kapelanka nieparzyste od 23 do 29 i...	50.039198	
139	aleja kijowska nieparzyste od 29 do 61, mazowi...	50.076793	
130	chopina parzyste od 20 do 38 i nieparzyste od ...	50.068270	
	lon		
nr_obwodu			
115	19.962448		
197	19.910323		
450	20.045561		
82	19.906140		
170	19.898372		
114	19.959030		
131	19.923721		
88	19.895011		
233	19.960425		
34	19.959886		
105	19.916498		
196	19.925605		
23	19.925617		
172	19.903910		
195	19.921178		
169	19.897460		
113	19.865925		
184	19.923369		
139	19.916471		
130	19.921021		

## wybory do prezydenta

```
In [10]: #majchrowski
df_res_pres2006.sort_values("majchrowski_proc").tail(20)
```

```
Out[10]:      year majchrowski po pis gibalal lesniak berkowicz inni \
nr_obwodu
377    2006     366   79  193      0      0      0    79
258    2006     346  116  145      0      0      0    69
238    2006     299  117  127      0      0      0    36
182    2006     220   77   97      0      0      0    32
108    2006     464  193  172      0      0      0    69
53     2006     220   86   94      0      0      0    23
247    2006     348  102  157      0      0      0    61
322    2006     257   88  109      0      0      0    33
100    2006     363  146  131      0      0      0    43
382    2006     256   66  108      0      0      0    46
404    2006     293   88  121      0      0      0    33
337    2006     293   76  123      0      0      0    42
379    2006     243   23  114      0      0      0    62
223    2006     334   89  144      0      0      0    34
109    2006     272   83  106      0      0      0    24
413    2006      69   12   23      0      0      0    19
105    2006     507  185  158      0      0      0    42
303    2006     428  142  128      0      0      0    52
224    2006     258   59   81      0      0      0    35
410    2006     168   15   64      0      0      0    34
```

nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc
377	1717	717	0.510460	0.110181	0.269177
258	1781	676	0.511834	0.171598	0.214497
238	1524	579	0.516408	0.202073	0.219344
182	1057	426	0.516432	0.180751	0.227700
108	1977	898	0.516704	0.214922	0.191537
53	778	423	0.520095	0.203310	0.222222
247	1598	668	0.520958	0.152695	0.235030
322	1266	487	0.527721	0.180698	0.223819
100	1488	683	0.531479	0.213763	0.191801
382	1356	476	0.537815	0.138655	0.226891
404	1371	535	0.547664	0.164486	0.226168
337	1880	534	0.548689	0.142322	0.230337
379	1292	442	0.549774	0.052036	0.257919
223	1737	601	0.555740	0.148087	0.239601
109	1267	485	0.560825	0.171134	0.218557
413	334	123	0.560976	0.097561	0.186992
105	2096	892	0.568386	0.207399	0.177130
303	2137	750	0.570667	0.189333	0.170667
224	1312	433	0.595843	0.136259	0.187067
410	704	281	0.597865	0.053381	0.227758

nr_obwodu	gibal_proc	lesniak_proc	berkowicz_proc	inni_proc	\
377	0.0	0.0	0.0	0.110181	
258	0.0	0.0	0.0	0.102071	
238	0.0	0.0	0.0	0.062176	
182	0.0	0.0	0.0	0.075117	
108	0.0	0.0	0.0	0.076837	
53	0.0	0.0	0.0	0.054374	
247	0.0	0.0	0.0	0.091317	
322	0.0	0.0	0.0	0.067762	
100	0.0	0.0	0.0	0.062958	
382	0.0	0.0	0.0	0.096639	
404	0.0	0.0	0.0	0.061682	
337	0.0	0.0	0.0	0.078652	
379	0.0	0.0	0.0	0.140271	
223	0.0	0.0	0.0	0.056572	
109	0.0	0.0	0.0	0.049485	
413	0.0	0.0	0.0	0.154472	
105	0.0	0.0	0.0	0.047085	
303	0.0	0.0	0.0	0.069333	
224	0.0	0.0	0.0	0.080831	
410	0.0	0.0	0.0	0.120996	

nr_obwodu	granice	lat	\
377	betlejemska, braci polskich, brunicka, bystro...	50.104329	
258	kurczaba nieparzyste	50.013346	
238	goaka nieparzyste od 1 do 41	50.014789	
182	do groty, osówka, norymberska, patynów, piet...	50.069195	
108	kluczborska, krowoderskich zuchów 4,11,13,15, ...	50.087058	
53	aleja 29 listopada nieparzyste od 71 do 93, ce...	50.083828	
247	telimeny 20, 32 i nieparzyste od 5 do 33 (bez ...)	50.017948	
322	osiedle owiecenia od 18 do 27	50.089299	
100	mackiewicza od 13	50.092538	
382	osiedle wandy	50.070480	
404	osiedle centrum d	50.072645	
337	osiedle piastów od 18 do 28, osiedle mistrzejo...	50.098070	
379	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106640	
223	andrychowska, gromady grudzi, karpiskiego, ...	50.019909	
109	krowoderskich zuchów 3, 3 a, 5, 7, 9, wybickie...	50.085517	
413	cementowa, dymarek, gwarecka, igoomska od 1 d...	50.075981	
105	bliska, bukietowa, jordanowska, na chaupkach,...	50.091728	
303	aleja jana pawa ii parzyste od 128 do 196, bi...	50.074153	
224	bystra, gminna, jastrzbia, klonowica, kotsisa...	50.020071	
410	branicka, chaupki, deszczowa, generaa karasz...	50.058063	

lon

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nr_obwodu
377      20.111491
258      20.005770
238      19.950909
182      19.953965
108      19.933577
53       19.953255
247      20.013803
322      19.993287
100      19.944688
382      20.048889
404      20.034660
337      20.018934
379      20.159216
223      19.957007
109      19.930246
413      20.115496
105      19.916498
303      20.007493
224      19.949659
410      20.127562

```

In [27]: df\_res\_pres2006.sort\_values("majchrowski\_proc").head(20)

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
452	2006		0	1	21	0	0	0	2
173	2006		184	385	173	0	0	0	67
451	2006		7	1	22	0	0	0	0
170	2006		286	596	163	0	0	0	71
218	2006		121	110	191	0	0	0	50
10	2006		116	120	167	0	0	0	48
30	2006		177	126	254	0	0	0	52
181	2006		200	243	114	0	0	0	122
29	2006		99	103	106	0	0	0	28
19	2006		153	124	186	0	0	0	47
289	2006		100	103	94	0	0	0	35
15	2006		187	157	203	0	0	0	54
297	2006		50	36	53	0	0	0	19
212	2006		247	267	196	0	0	0	64
165	2006		321	352	259	0	0	0	73
179	2006		208	115	244	0	0	0	72
21	2006		208	150	216	0	0	0	64
158	2006		159	117	169	0	0	0	37
167	2006		251	276	159	0	0	0	71
243	2006		208	169	190	0	0	0	60
		max_voters	votes	majchrowski_proc	po_proc	pis_proc	\		

nr_obwodu						
452	32	24	0.000000	0.041667	0.875000	
173	1794	809	0.227441	0.475896	0.213844	
451	30	30	0.233333	0.033333	0.733333	
170	2269	1116	0.256272	0.534050	0.146057	
218	1029	472	0.256356	0.233051	0.404661	
10	1056	451	0.257206	0.266075	0.370288	
30	1266	609	0.290640	0.206897	0.417077	
181	1469	679	0.294551	0.357879	0.167894	
29	776	336	0.294643	0.306548	0.315476	
19	1051	510	0.300000	0.243137	0.364706	
289	923	332	0.301205	0.310241	0.283133	
15	1184	601	0.311148	0.261231	0.337770	
297	539	158	0.316456	0.227848	0.335443	
212	1435	774	0.319121	0.344961	0.253230	
165	1735	1005	0.319403	0.350249	0.257711	
179	2085	639	0.325509	0.179969	0.381847	
21	1354	638	0.326019	0.235110	0.338558	
158	888	482	0.329876	0.242739	0.350622	
167	1377	757	0.331572	0.364597	0.210040	
243	1353	627	0.331738	0.269537	0.303030	

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
452	0.0	0.0	0.0	0.083333	
173	0.0	0.0	0.0	0.082818	
451	0.0	0.0	0.0	0.000000	
170	0.0	0.0	0.0	0.063620	
218	0.0	0.0	0.0	0.105932	
10	0.0	0.0	0.0	0.106430	
30	0.0	0.0	0.0	0.085386	
181	0.0	0.0	0.0	0.179676	
29	0.0	0.0	0.0	0.083333	
19	0.0	0.0	0.0	0.092157	
289	0.0	0.0	0.0	0.105422	
15	0.0	0.0	0.0	0.089850	
297	0.0	0.0	0.0	0.120253	
212	0.0	0.0	0.0	0.082687	
165	0.0	0.0	0.0	0.072637	
179	0.0	0.0	0.0	0.112676	
21	0.0	0.0	0.0	0.100313	
158	0.0	0.0	0.0	0.076763	
167	0.0	0.0	0.0	0.093791	
243	0.0	0.0	0.0	0.095694	

nr_obwodu	granice	lat	\
452	dom pomocy spoecznej kraków os. hutnicze 5	50.073506	

173	bugarska, dereniowa, kobierzyska nieparzyste...	50.026006
451	dom pomocy spoecznej os. szkolne 28	50.077136
170	chmieleniec, czerwone maki 55,69,71,73,82,84, ...	50.018611
218	bogosawionej franciszki siedliskiej, cechowa...	50.004418
10	dominikaska, franciszkaska 2 i 4, grodzka ni...	50.059047
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068988
181	baanki, wikowa, ekielskiego, harasymowicza,...	50.032507
29	duga nieparzyste od 31 do 55 i parzyste od 40...	50.069604
19	boego miosierdzia, felicjanek, maa, retoryk...	50.058584
289	czyówka, krzemionki, podskale, przecz, rede...	50.036245
15	floriaska, may rynek, mikajska, na gródku,...	50.063624
297	dekerta, herlinga-grudziskiego, kiekowskiego...	50.047665
212	amarantowa, banachiewicza, bellerta, boratysk...	49.999226
165	aleja maeckiego, doktora kudliskiego, doktor...	50.054774
179	bagienna, benedyktyska, bogucianka, bolesawa...	50.007643
21	czapskich, garncarska parzyste od 2 do 26, jab...	50.060615
158	borelowskiego-lelewela 19, kauy, owiecka 3,...	50.055625
167	28 lipca 1943 roku, bkowskiego, berberywsowa, ...	50.063566
243	bierkowskiego, bieanowska parzyste od 234 do ...	50.008823

nr_obwodu	lon
452	20.046511
173	19.917659
451	20.048637
170	19.898372
218	19.966825
10	19.939749
30	19.938370
181	19.892064
29	19.937721
19	19.929736
289	19.947040
15	19.940436
297	19.967384
212	19.906795
165	19.896836
179	19.831080
21	19.930117
158	19.922497
167	19.871566
243	20.025903

In [32]: #po

```
df_res_pres2006.sort_values("po_proc").tail(20)
```

Out[32]: year majchrowski po pis gibala lesniak berkowicz inni \\\n nr\_obwodu

88	2006	338	254	130	0	0	0	58
123	2006	341	306	230	0	0	0	61
217	2006	178	157	98	0	0	0	44
211	2006	332	292	183	0	0	0	78
174	2006	214	205	144	0	0	0	55
155	2006	279	256	174	0	0	0	57
212	2006	247	267	196	0	0	0	64
22	2006	169	148	69	0	0	0	42
172	2006	236	199	84	0	0	0	51
113	2006	197	182	96	0	0	0	46
165	2006	321	352	259	0	0	0	73
97	2006	435	383	183	0	0	0	77
230	2006	299	284	150	0	0	0	64
117	2006	144	146	88	0	0	0	31
181	2006	200	243	114	0	0	0	122
167	2006	251	276	159	0	0	0	71
169	2006	318	373	152	0	0	0	79
233	2006	155	178	60	0	0	0	27
173	2006	184	385	173	0	0	0	67
170	2006	286	596	163	0	0	0	71

nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc	\
88	1778	780	0.433333	0.325641	0.166667	
123	1931	938	0.363539	0.326226	0.245203	
217	1207	477	0.373166	0.329140	0.205451	
211	1892	885	0.375141	0.329944	0.206780	
174	1464	618	0.346278	0.331715	0.233010	
155	1488	766	0.364230	0.334204	0.227154	
212	1435	774	0.319121	0.344961	0.253230	
22	1004	428	0.394860	0.345794	0.161215	
172	1323	570	0.414035	0.349123	0.147368	
113	1224	521	0.378119	0.349328	0.184261	
165	1735	1005	0.319403	0.350249	0.257711	
97	2078	1078	0.403525	0.355288	0.169759	
230	1981	797	0.375157	0.356336	0.188206	
117	827	409	0.352078	0.356968	0.215159	
181	1469	679	0.294551	0.357879	0.167894	
167	1377	757	0.331572	0.364597	0.210040	
169	2026	922	0.344902	0.404555	0.164859	
233	915	420	0.369048	0.423810	0.142857	
173	1794	809	0.227441	0.475896	0.213844	
170	2269	1116	0.256272	0.534050	0.146057	

nr_obwodu	gibal_a_proc	lesniak_proc	berkowicz_proc	inni_proc	\
88	0.0	0.0	0.0	0.074359	
123	0.0	0.0	0.0	0.065032	

217	0.0	0.0	0.0	0.092243
211	0.0	0.0	0.0	0.088136
174	0.0	0.0	0.0	0.088997
155	0.0	0.0	0.0	0.074413
212	0.0	0.0	0.0	0.082687
22	0.0	0.0	0.0	0.098131
172	0.0	0.0	0.0	0.089474
113	0.0	0.0	0.0	0.088292
165	0.0	0.0	0.0	0.072637
97	0.0	0.0	0.0	0.071429
230	0.0	0.0	0.0	0.080301
117	0.0	0.0	0.0	0.075795
181	0.0	0.0	0.0	0.179676
167	0.0	0.0	0.0	0.093791
169	0.0	0.0	0.0	0.085683
233	0.0	0.0	0.0	0.064286
173	0.0	0.0	0.0	0.082818
170	0.0	0.0	0.0	0.063620

nr_obwodu		granice	lat \
88	podkowiskiego, radzikowskiego eljasza parzyst...	50.085267	
123	aleja kijowska parzyste od 30 do 34, bytomska,...	50.074954	
217	kordiana, tuchowska parzyste od 2 do 34 i niep...	50.009983	
211	bastionowa, bluszczowa, borkowska, czajkowskie...	50.000417	
174	kobierzyska nieparzyste od 91 do 139 a,b i pa...	50.027504	
155	aleja kasztanowa nieparzyste od 47 do 71b,73 i...	50.066879	
212	amarantowa, banachiewicza, bellerta, boratysk...	49.999226	
22	aleja mickiewicza nieparzyste od 25 do 37, cza...	50.065956	
172	drukarska, gutenberga, jahody, profesora wini...	50.023894	
113	arsena, banacha, belwederczyków, bibicka, do...	50.104572	
165	aleja maeckiego, doktora kudliskiego, doktor...	50.054774	
97	bobrzańskiej, gboka, frycza-modrzewskiego, ja...	50.087214	
230	bujaka, chmielna parzyste, daliowa, generaa f...	50.009847	
117	armii krajowej nieparzyste od 5 do 53,bakaarz...	50.069896	
181	baanki, wikowa, ekielskiego, harasymowicza,...	50.032507	
167	28 lipca 1943 roku, bkowskiego, berberywsowa, ...	50.063566	
169	anusia, babinicza, billewiczów, braci kiemliczó...	50.000973	
233	turniejowa nieparzyste od 59 i parzyste od 60 ...	50.010590	
173	bugarska, dereniowa, kobierzyska nieparzyste...	50.026006	
170	chmieleniec, czerwone maki 55,69,71,73,82,84, ...	50.018611	

nr_obwodu	lon
88	19.895011
123	19.917193
217	19.963380
211	19.911967

174	19.913634
155	19.855723
212	19.906795
22	19.925090
172	19.903910
113	19.865925
165	19.896836
97	19.942826
230	19.951896
117	19.900726
181	19.892064
167	19.871566
169	19.897460
233	19.960425
173	19.917659
170	19.898372

In [7]: df\_res\_pres2006.sort\_values("po\_proc").head(20)

Out[7]:

nr_obwodu	year	majchrowski	po	pis	gibalala	lesniak	berkowicz	inni	\
451	2006	7	1	22	0	0	0	0	
452	2006	0	1	21	0	0	0	2	
379	2006	243	23	114	0	0	0	62	
410	2006	168	15	64	0	0	0	34	
411	2006	202	37	134	0	0	0	29	
412	2006	139	29	95	0	0	0	41	
203	2006	135	27	83	0	0	0	32	
413	2006	69	12	23	0	0	0	19	
360	2006	86	20	76	0	0	0	17	
371	2006	363	84	266	0	0	0	57	
377	2006	366	79	193	0	0	0	79	
364	2006	212	56	177	0	0	0	39	
369	2006	133	37	132	0	0	0	17	
358	2006	149	45	139	0	0	0	48	
376	2006	124	36	102	0	0	0	39	
350	2006	102	34	118	0	0	0	28	
351	2006	266	76	228	0	0	0	51	
285	2006	129	38	91	0	0	0	47	
368	2006	262	81	265	0	0	0	42	
384	2006	276	70	163	0	0	0	51	
nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc	\			
451	30	30	0.233333	0.033333	0.733333				
452	32	24	0.000000	0.041667	0.875000				
379	1292	442	0.549774	0.052036	0.257919				
410	704	281	0.597865	0.053381	0.227758				

411	1193	402	0.502488	0.092040	0.333333
412	908	304	0.457237	0.095395	0.312500
203	630	277	0.487365	0.097473	0.299639
413	334	123	0.560976	0.097561	0.186992
360	546	199	0.432161	0.100503	0.381910
371	1880	770	0.471429	0.109091	0.345455
377	1717	717	0.510460	0.110181	0.269177
364	1679	484	0.438017	0.115702	0.365702
369	996	319	0.416928	0.115987	0.413793
358	1053	381	0.391076	0.118110	0.364829
376	719	301	0.411960	0.119601	0.338870
350	1050	282	0.361702	0.120567	0.418440
351	1877	621	0.428341	0.122383	0.367150
285	1031	305	0.422951	0.124590	0.298361
368	1797	650	0.403077	0.124615	0.407692
384	1622	560	0.492857	0.125000	0.291071

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
451	0.0	0.0	0.0	0.000000	
452	0.0	0.0	0.0	0.083333	
379	0.0	0.0	0.0	0.140271	
410	0.0	0.0	0.0	0.120996	
411	0.0	0.0	0.0	0.072139	
412	0.0	0.0	0.0	0.134868	
203	0.0	0.0	0.0	0.115523	
413	0.0	0.0	0.0	0.154472	
360	0.0	0.0	0.0	0.085427	
371	0.0	0.0	0.0	0.074026	
377	0.0	0.0	0.0	0.110181	
364	0.0	0.0	0.0	0.080579	
369	0.0	0.0	0.0	0.053292	
358	0.0	0.0	0.0	0.125984	
376	0.0	0.0	0.0	0.129568	
350	0.0	0.0	0.0	0.099291	
351	0.0	0.0	0.0	0.082126	
285	0.0	0.0	0.0	0.154098	
368	0.0	0.0	0.0	0.064615	
384	0.0	0.0	0.0	0.091071	

nr_obwodu	granice	lat	\
451	dom pomocy spoecznej os. szkolne 28	50.077136	
452	dom pomocy spoecznej kraków os. hutnicze 5	50.073506	
379	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106640	
410	branicka, chaupki, deszczowa, generaa karasz...	50.058063	
411	barwinkowa, ciekowiec, czeczeska 7, 9, 11, 13...	50.075339	
412	bartnicza, betonowa, biwakowa, brzeska, droys...	50.052665	

203	barycka, bednarska, blacharska, gacki, gsioro...	49.989468
413	cementowa, dymarek, gwarecka, igoomska od 1 d...	50.075981
360	osiedle przy arce od 20 do 26, batalionu "para...	50.081658
371	darwina 4, kocmyrzowska 8, owiskiego 3, 4, 5...	50.090234
377	betlejemska, braci polskich, brunicka, bystro...	50.104329
364	osiedle kazimierzowskie od 26 do 34	50.086181
369	osiedle na wzgórzach od 11 do 13 a, od 28 do 35	50.035794
358	osiedle przy arce od 9 do 12 i 14	50.083552
376	blokowa, burzowa, darwina parzyste od 6 i niep...	50.088176
350	osiedle kalinowe od 12 do 17	50.092453
351	osiedle kalinowe od 18 do 24	50.090578
285	bartników, pukownika barty, bugaj, czeczotta,...	50.039525
368	osiedle na wzgórzach od 1 do 10, od 36 do 44, 59	50.092457
384	cerchów, osiedle modoci od 1 do 15 (bez 9, 1...	50.068424

	lon
nr_obwodu	
451	20.048637
452	20.046511
379	20.159216
410	20.127562
411	20.153694
412	20.189343
203	20.006368
413	20.115496
360	20.028098
371	20.059094
377	20.111491
364	20.021874
369	19.892511
358	20.027795
376	20.073760
350	20.014984
351	20.011350
285	20.052604
368	20.060040
384	20.046690

In [10]: df\_res\_pres2006.sort\_values("pis\_proc").tail(20)

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
375	2006	206	75	198	0	0	0	61	
351	2006	266	76	228	0	0	0	51	
10	2006	116	120	167	0	0	0	48	
215	2006	102	39	95	0	0	0	17	
346	2006	304	118	284	0	0	0	46	
312	2006	76	37	82	0	0	0	20	

354	2006	219	94	219	0	0	0	42
179	2006	208	115	244	0	0	0	72
360	2006	86	20	76	0	0	0	17
344	2006	145	60	158	0	0	0	33
348	2006	218	79	222	0	0	0	37
347	2006	203	85	217	0	0	0	37
218	2006	121	110	191	0	0	0	50
368	2006	262	81	265	0	0	0	42
365	2006	273	101	293	0	0	0	46
369	2006	133	37	132	0	0	0	17
30	2006	177	126	254	0	0	0	52
350	2006	102	34	118	0	0	0	28
451	2006	7	1	22	0	0	0	0
452	2006	0	1	21	0	0	0	2

nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc	\
375	1267	540	0.381481	0.138889	0.366667	
351	1877	621	0.428341	0.122383	0.367150	
10	1056	451	0.257206	0.266075	0.370288	
215	636	253	0.403162	0.154150	0.375494	
346	1867	752	0.404255	0.156915	0.377660	
312	597	215	0.353488	0.172093	0.381395	
354	1469	574	0.381533	0.163763	0.381533	
179	2085	639	0.325509	0.179969	0.381847	
360	546	199	0.432161	0.100503	0.381910	
344	1329	396	0.366162	0.151515	0.398990	
348	1534	556	0.392086	0.142086	0.399281	
347	1468	542	0.374539	0.156827	0.400369	
218	1029	472	0.256356	0.233051	0.404661	
368	1797	650	0.403077	0.124615	0.407692	
365	2001	713	0.382889	0.141655	0.410940	
369	996	319	0.416928	0.115987	0.413793	
30	1266	609	0.290640	0.206897	0.417077	
350	1050	282	0.361702	0.120567	0.418440	
451	30	30	0.233333	0.033333	0.733333	
452	32	24	0.000000	0.041667	0.875000	

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
375	0.0	0.0	0.0	0.112963	
351	0.0	0.0	0.0	0.082126	
10	0.0	0.0	0.0	0.106430	
215	0.0	0.0	0.0	0.067194	
346	0.0	0.0	0.0	0.061170	
312	0.0	0.0	0.0	0.093023	
354	0.0	0.0	0.0	0.073171	
179	0.0	0.0	0.0	0.112676	

360	0.0	0.0	0.0	0.085427
344	0.0	0.0	0.0	0.083333
348	0.0	0.0	0.0	0.066547
347	0.0	0.0	0.0	0.068266
218	0.0	0.0	0.0	0.105932
368	0.0	0.0	0.0	0.064615
365	0.0	0.0	0.0	0.064516
369	0.0	0.0	0.0	0.053292
30	0.0	0.0	0.0	0.085386
350	0.0	0.0	0.0	0.099291
451	0.0	0.0	0.0	0.000000
452	0.0	0.0	0.0	0.083333

nr_obwodu			granice	lat \
375	birkuta, boywoja, bukszpanowa, cyprysów, darw...	50.107945		
351	osiedle kalinowe od 18 do 24	50.090578		
10	dominikaska, franciszkaska 2 i 4, grodzka ni...	50.059047		
215	bochenka, podedworze 6, 6 a, 8, 10, 10 b, 12	50.011650		
346	osiedle wysokie od 1 do 22 c, urszulki, zoczo...	50.089827		
312	cichociemnych ak, ciepownicza, cuplowa, do wi...	50.060678		
354	osiedle albertyskie od 12 do 21	50.082072		
179	bagienna, benedyktyksa, bogucianka, bolesawa...	50.007643		
360	osiedle przy arce od 20 do 26, batalionu "para...	50.081658		
344	osiedle na lotnisku 3, od 7 do 18 a, króla	50.087455		
348	osiedle strusia od 13 do 20, bogusza	50.088227		
347	osiedle strusia od 7 do 12	50.088604		
218	bogosawionej franciszki siedliskiej, cechowa...	50.004418		
368	osiedle na wzgórzach od 1 do 10, od 36 do 44, 59	50.092457		
365	osiedle kazimierzowskie od 1 do 15, spytka z m...	50.083328		
369	osiedle na wzgórzach od 11 do 13 a, od 28 do 35	50.035794		
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068988		
350	osiedle kalinowe od 12 do 17	50.092453		
451	dom pomocy spoecznej os. szkolne 28	50.077136		
452	dom pomocy spoecznej kraków os. hutnicze 5	50.073506		

nr_obwodu	lon
375	20.080423
351	20.011350
10	19.939749
215	19.975567
346	20.020655
312	19.999038
354	20.021147
179	19.831080
360	20.028098
344	20.015234

348	20.009297
347	20.011156
218	19.966825
368	20.060040
365	20.023985
369	19.892511
30	19.938370
350	20.014984
451	20.048637
452	20.046511

In [9]: df\_res\_pres2006.sort\_values("pis\_proc").head(20)

Out[9]:

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
82	2006	230	140	53	0	0	0	45	
115	2006	319	221	90	0	0	0	54	
450	2006	9	3	3	0	0	0	7	
23	2006	160	106	47	0	0	0	28	
233	2006	155	178	60	0	0	0	27	
170	2006	286	596	163	0	0	0	71	
172	2006	236	199	84	0	0	0	51	
114	2006	215	146	69	0	0	0	29	
22	2006	169	148	69	0	0	0	42	
34	2006	309	193	108	0	0	0	58	
184	2006	319	174	105	0	0	0	50	
169	2006	318	373	152	0	0	0	79	
88	2006	338	254	130	0	0	0	58	
181	2006	200	243	114	0	0	0	122	
279	2006	208	154	86	0	0	0	60	
97	2006	435	383	183	0	0	0	77	
303	2006	428	142	128	0	0	0	52	
105	2006	507	185	158	0	0	0	42	
36	2006	195	127	78	0	0	0	39	
131	2006	298	163	112	0	0	0	40	

nr_obwodu	max_voters	votes	majchrowski_proc	po_proc	pis_proc	\
82	932	468	0.491453	0.299145	0.113248	
115	1555	684	0.466374	0.323099	0.131579	
450	34	22	0.409091	0.136364	0.136364	
23	709	341	0.469208	0.310850	0.137830	
233	915	420	0.369048	0.423810	0.142857	
170	2269	1116	0.256272	0.534050	0.146057	
172	1323	570	0.414035	0.349123	0.147368	
114	1331	459	0.468410	0.318083	0.150327	
22	1004	428	0.394860	0.345794	0.161215	
34	1371	668	0.462575	0.288922	0.161677	

184	1526	648	0.492284	0.268519	0.162037
169	2026	922	0.344902	0.404555	0.164859
88	1778	780	0.433333	0.325641	0.166667
181	1469	679	0.294551	0.357879	0.167894
279	1480	508	0.409449	0.303150	0.169291
97	2078	1078	0.403525	0.355288	0.169759
303	2137	750	0.570667	0.189333	0.170667
105	2096	892	0.568386	0.207399	0.177130
36	1050	439	0.444191	0.289294	0.177677
131	1204	613	0.486134	0.265905	0.182708

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
82	0.0	0.0	0.0	0.096154	
115	0.0	0.0	0.0	0.078947	
450	0.0	0.0	0.0	0.318182	
23	0.0	0.0	0.0	0.082111	
233	0.0	0.0	0.0	0.064286	
170	0.0	0.0	0.0	0.063620	
172	0.0	0.0	0.0	0.089474	
114	0.0	0.0	0.0	0.063181	
22	0.0	0.0	0.0	0.098131	
34	0.0	0.0	0.0	0.086826	
184	0.0	0.0	0.0	0.077160	
169	0.0	0.0	0.0	0.085683	
88	0.0	0.0	0.0	0.074359	
181	0.0	0.0	0.0	0.179676	
279	0.0	0.0	0.0	0.118110	
97	0.0	0.0	0.0	0.071429	
303	0.0	0.0	0.0	0.069333	
105	0.0	0.0	0.0	0.047085	
36	0.0	0.0	0.0	0.088838	
131	0.0	0.0	0.0	0.065253	

nr_obwodu	granice	lat	\
82	biskupa gawliny, chemoskiego od 74, chmurna,...	50.090821	
115	aleja 29 listopada od 161 do 214, 226, arcybis...	50.096582	
450	dom pomocy spoecznej kraków os. sportowe 9	50.081063	
23	aleja mickiewicza nieparzyste od 41 do 63, gra...	50.067184	
233	turniejowa nieparzyste od 59 i parzyste od 60 ...	50.010590	
170	chmieleniec, czerwone maki 55,69,71,73,82,84, ...	50.018611	
172	drukarska, gutenberga, jahody, profesora wini...	50.023894	
114	kunicy kotajowskiej parzyste od 18 i niepa...	50.098701	
22	aleja mickiewicza nieparzyste od 25 do 37, cza...	50.065956	
34	aleja pk. beliny-pramowskiego nieparzyste od...	50.066984	
184	ceglarska, kapelanka nieparzyste od 23 do 29 i...	50.039198	
169	anusia, babinicza, billewiczów, braci kiemliczó...	50.000973	

88	podkowiskiego, radzikowskiego eljasza parzyst...	50.085267
181	baanki, wikowa, ekielskiego, harasymowicza,...	50.032507
279	koszykarska, nowohucka 13b, 33, 37, 39, 41, 43...	50.048663
97	bobrzeckiej, gboka, frycza-modrzewskiego, ja...	50.087214
303	aleja jana pawa ii parzyste od 128 do 196, bi...	50.074153
105	bliska, bukietowa, jordanowska, na chaupkach,...	50.091728
36	aleja pk. beliny-pramowskiego parzyste od 2 ...	50.070281
131	józefitów od 14 do 21, konarskiego od 39 do 54...	50.070296

	lon
nr_obwodu	
82	19.906140
115	19.962448
450	20.045561
23	19.925617
233	19.960425
170	19.898372
172	19.903910
114	19.959030
22	19.925090
34	19.959886
184	19.923369
169	19.897460
88	19.895011
181	19.892064
279	19.986741
97	19.942826
303	20.007493
105	19.916498
36	19.959236
131	19.923721

### 1.3.2 rok 2010

#### wybory do rady miasta

In [8]: #po  
df\_res\_rada2010.sort\_values("po\_proc").tail(20)

Out[8]:

nr_obwodu	year	majchrowski	po	pis	gibalal	lewica	berkowicz	inni	\
278	2010	90	525	209	0	46	0	91	
22	2010	43	193	66	0	16	0	33	
152	2010	63	293	129	0	21	0	26	
171	2010	60	254	81	0	26	0	34	
241	2010	52	263	73	0	32	0	50	
276	2010	24	161	58	0	10	0	33	
316	2010	39	265	100	0	36	0	29	
82	2010	53	312	114	0	40	0	31	

115	2010	71	294	80	0	31	0	42
259	2010	48	242	86	0	18	0	32
378	2010	18	142	75	0	12	0	1
170	2010	85	329	83	0	28	0	47
34	2010	73	381	101	0	61	0	43
330	2010	34	386	128	0	56	0	54
275	2010	41	374	157	0	23	0	41
274	2010	46	438	114	0	53	0	79
201	2010	73	330	76	0	23	0	38
173	2010	100	604	147	0	40	0	55
172	2010	72	527	114	0	29	0	68
114	2010	34	420	101	0	23	0	60
nr_obwodu		max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
278		1923	961	...	0.093652	0.546306	0.217482	
22		847	351	...	0.122507	0.549858	0.188034	
152		959	532	...	0.118421	0.550752	0.242481	
171		1118	455	...	0.131868	0.558242	0.178022	
241		1034	470	...	0.110638	0.559574	0.155319	
276		623	286	...	0.083916	0.562937	0.202797	
316		1110	469	...	0.083156	0.565032	0.213220	
82		1259	550	...	0.096364	0.567273	0.207273	
115		1589	518	...	0.137066	0.567568	0.154440	
259		1043	426	...	0.112676	0.568075	0.201878	
378		592	248	...	0.072581	0.572581	0.302419	
170		1182	572	...	0.148601	0.575175	0.145105	
34		1319	659	...	0.110774	0.578149	0.153263	
330		1394	658	...	0.051672	0.586626	0.194529	
275		1374	636	...	0.064465	0.588050	0.246855	
274		1755	730	...	0.063014	0.600000	0.156164	
201		1212	540	...	0.135185	0.611111	0.140741	
173		2063	946	...	0.105708	0.638478	0.155391	
172		1707	810	...	0.088889	0.650617	0.140741	
114		1294	638	...	0.053292	0.658307	0.158307	
nr_obwodu		gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\		
278		0.0	0.047867		0.0	0.094693		
22		0.0	0.045584		0.0	0.094017		
152		0.0	0.039474		0.0	0.048872		
171		0.0	0.057143		0.0	0.074725		
241		0.0	0.068085		0.0	0.106383		
276		0.0	0.034965		0.0	0.115385		
316		0.0	0.076759		0.0	0.061834		
82		0.0	0.072727		0.0	0.056364		
115		0.0	0.059846		0.0	0.081081		
259		0.0	0.042254		0.0	0.075117		

378	0.0	0.048387	0.0	0.004032
170	0.0	0.048951	0.0	0.082168
34	0.0	0.092564	0.0	0.065250
330	0.0	0.085106	0.0	0.082067
275	0.0	0.036164	0.0	0.064465
274	0.0	0.072603	0.0	0.108219
201	0.0	0.042593	0.0	0.070370
173	0.0	0.042283	0.0	0.058140
172	0.0	0.035802	0.0	0.083951
114	0.0	0.036050	0.0	0.094044

nr_obwodu		granice	lat \
278	aleja dygasiskiego, gersona, kodzka, libera,...	50.022728	
22	aleja mickiewicza nieparzyste od 25 do 37, cza...	50.065331	
152	drzymay, kunickiego, mysakowskiego (bez 13),...	50.073954	
171	anusi, babinicza, billewiczów, braci kiemliczó...	50.001191	
241	turniejowa nieparzyste od 59 i parzyste od 62 ...	50.010733	
276	balickiego, bardowskiego, bieanowska nieparzy...	50.026430	
316	osiedle dywizjonu 303 18, 19, 19c, 19d, 21, 21...	50.083147	
82	biskupa gawliny, chemoskiego od 70a, chmurna...	50.090804	
115	kunicy kotajowskiej parzyste od 18 i niepa...	50.098151	
259	maa góra parzyste od 16 (bez nr 32)	50.009748	
378	kleinera, kocmyrzowska parzyste od 2 do 6, nie...	50.080699	
170	burgundzka, gwiedzista, kobierzyska nieparzy...	50.011101	
34	aleja pk. beliny-pramowskiego nieparzyste od...	50.069045	
330	osiedle owiecenia 40, 42, 43, 46, 46a, 47, 48...	50.094321	
275	andrusikiewicza, bielskiego, bieanowska niepa...	50.023197	
274	bieanowska 78, 78 a, 80, 80 a, 82, 82 a, 84, ...	50.023222	
201	borkowskie bonia, cesarza, doktora uczyskie...	50.013747	
173	czerwone maki 49, 53, 55, 57, 59, 61, 69, 71, ...	50.014981	
172	chmieleniec, szuarowa	50.020481	
114	arsena, banacha, belwederczyków, bibicka, do...	50.065126	

nr_obwodu	lon
278	19.983402
22	19.927495
152	19.892708
171	19.896995
241	19.960294
276	19.986090
316	20.005734
82	19.906077
115	19.954291
259	20.020761
378	20.060883
170	19.905284

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34          19.965695
330         19.994495
275         19.992945
274         19.996369
201         19.911173
173          19.888748
172          19.898014
114          19.940302

```

[20 rows x 21 columns]

In [6]: df\_res\_rada2010.sort\_values("po\_proc").head(20)

nr_obwodu	year	majchrowski	po	pis	gibal	lewica	berkowicz	inni	\
293	2010	106	54	104	0	15	0	20	
421	2010	116	51	73	0	2	0	10	
292	2010	149	85	136	0	10	0	30	
211	2010	44	34	48	0	6	0	30	
422	2010	77	99	234	0	24	0	37	
252	2010	282	163	78	0	14	0	158	
387	2010	15	67	133	0	11	0	58	
202	2010	275	127	69	0	24	0	39	
424	2010	48	28	21	0	8	0	12	
389	2010	87	85	99	0	39	0	37	
388	2010	55	172	384	0	45	0	38	
250	2010	217	192	107	0	40	0	172	
208	2010	47	58	82	0	19	0	12	
395	2010	126	168	220	0	58	0	39	
390	2010	44	112	184	0	18	0	33	
379	2010	60	158	223	0	55	0	50	
216	2010	477	280	136	0	24	0	41	
249	2010	68	191	327	0	26	0	40	
222	2010	36	84	117	0	25	0	24	
213	2010	98	106	98	0	19	0	37	
nr_obwodu	max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\	
293	1069	299	...		0.354515	0.180602	0.347826		
421	721	252	...		0.460317	0.202381	0.289683		
292	1106	410	...		0.363415	0.207317	0.331707		
211	583	162	...		0.271605	0.209877	0.296296		
422	1240	471	...		0.163482	0.210191	0.496815		
252	1471	695	...		0.405755	0.234532	0.112230		
387	759	284	...		0.052817	0.235915	0.468310		
202	1436	534	...		0.514981	0.237828	0.129213		
424	345	117	...		0.410256	0.239316	0.179487		
389	1117	347	...		0.250720	0.244957	0.285303		

388	1873	694	...	0.079251	0.247839	0.553314
250	1756	728	...	0.298077	0.263736	0.146978
208	581	218	...	0.215596	0.266055	0.376147
395	1682	611	...	0.206219	0.274959	0.360065
390	1365	391	...	0.112532	0.286445	0.470588
379	1772	546	...	0.109890	0.289377	0.408425
216	1693	958	...	0.497912	0.292276	0.141962
249	1959	652	...	0.104294	0.292945	0.501534
222	691	286	...	0.125874	0.293706	0.409091
213	1113	358	...	0.273743	0.296089	0.273743

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
293	0.0	0.050167		0.0	0.066890
421	0.0	0.007937		0.0	0.039683
292	0.0	0.024390		0.0	0.073171
211	0.0	0.037037		0.0	0.185185
422	0.0	0.050955		0.0	0.078556
252	0.0	0.020144		0.0	0.227338
387	0.0	0.038732		0.0	0.204225
202	0.0	0.044944		0.0	0.073034
424	0.0	0.068376		0.0	0.102564
389	0.0	0.112392		0.0	0.106628
388	0.0	0.064841		0.0	0.054755
250	0.0	0.054945		0.0	0.236264
208	0.0	0.087156		0.0	0.055046
395	0.0	0.094926		0.0	0.063830
390	0.0	0.046036		0.0	0.084399
379	0.0	0.100733		0.0	0.091575
216	0.0	0.025052		0.0	0.042797
249	0.0	0.039877		0.0	0.061350
222	0.0	0.087413		0.0	0.083916
213	0.0	0.053073		0.0	0.103352

nr_obwodu		granice	lat	\
293	bartników, pukownika barty, bugaj, czeczotta,...	50.038104		
421	branicka, chaupki, deszczowa, generaa karasz...	50.057891		
292	agawy, albatrosów, botewa, bukowa, golikówka n...	50.041450		
211	goba, lei, matematyków krakowskich parzyste ...	49.975544		
422	barwinkowa, ciekowiec, czeczeska 7, 9, 11, 13...	50.075303		
252	bieanowska parzyste od 250, bogucicka, braci ...	50.017792		
387	blokowa, burzowa, darwina parzyste od 6 i nie...	50.090246		
202	goryczkowa, jagodowa parzyste od 2 do 12 i nie...	50.014776		
424	cementowa, dymarek. gwarecka, igoomska od 1 d...	50.073431		
389	jeziorany, kantorowicka parzyste od 58 do 98 i...	50.104698		
388	betlejemska, braci polskich, brunicka, bystro...	50.104827		
250	czarnochowicka, flanka, gerberowa, grzecha, ha...	50.009406		

208	barycka, blacharska, gacki, gsiorowskiego, gr...	49.988802
395	cerchów, osiedle modoci od 1 do 15/bez 9, 10...	50.068955
390	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621
379	osiedle na wzgórzach od 1 do 10, od 36 do 44, 59	50.092577
216	armii kraków, biaostocka, bieszczadzka, ciech...	50.086637
249	agatowa, ametystowa, domagay, magazynowa 5, m...	50.021984
222	bochenka (bez 12), podedworze 6, 6 a, 8, 10, 1...	50.010922
213	aleksandrowicza, chrzanowskiego, gocinna, grz...	49.977144

	lon
nr_obwodu	
293	20.052474
421	20.118626
292	20.022869
211	19.963568
422	20.154414
252	20.032043
387	20.072984
202	19.920190
424	20.116874
389	20.039496
388	20.112533
250	20.062926
208	20.012650
395	20.049811
390	20.159313
379	20.059875
216	19.891589
249	20.042078
222	19.974225
213	19.949277

[20 rows x 21 columns]

In [8]: #pis  
df\_res\_rada2010.sort\_values("pis\_proc").tail(20)

Out[8]:

nr_obwodu	year	majchrowski	po	pis	gibal	lewica	berkowicz	inni	\
355	2010	49	118	149	0	27	0	26	
376	2010	45	269	265	0	41	0	35	
401	2010	32	108	123	0	26	0	15	
354	2010	34	122	137	0	24	0	21	
423	2010	24	132	143	0	22	0	30	
379	2010	60	158	223	0	55	0	50	
222	2010	36	84	117	0	25	0	24	
362	2010	57	196	241	0	42	0	49	
369	2010	44	134	164	0	20	0	36	

361	2010	32	99	120	0	14	0	14
30	2010	64	178	229	0	17	0	44
322	2010	9	81	92	0	11	0	17
387	2010	15	67	133	0	11	0	58
390	2010	44	112	184	0	18	0	33
181	2010	58	149	214	0	9	0	14
225	2010	41	168	251	0	19	0	30
422	2010	77	99	234	0	24	0	37
249	2010	68	191	327	0	26	0	40
386	2010	41	175	299	0	30	0	37
388	2010	55	172	384	0	45	0	38
nr_obwodu								
355	1287	369	...		0.132791	0.319783	0.403794	
376	1881	655	...		0.068702	0.410687	0.404580	
401	775	304	...		0.105263	0.355263	0.404605	
354	1076	338	...		0.100592	0.360947	0.405325	
423	944	351	...		0.068376	0.376068	0.407407	
379	1772	546	...		0.109890	0.289377	0.408425	
222	691	286	...		0.125874	0.293706	0.409091	
362	1812	585	...		0.097436	0.335043	0.411966	
369	1064	398	...		0.110553	0.336683	0.412060	
361	1096	279	...		0.114695	0.354839	0.430108	
30	1125	532	...		0.120301	0.334586	0.430451	
322	619	210	...		0.042857	0.385714	0.438095	
387	759	284	...		0.052817	0.235915	0.468310	
390	1365	391	...		0.112532	0.286445	0.470588	
181	1221	444	...		0.130631	0.335586	0.481982	
225	1185	509	...		0.080550	0.330059	0.493124	
422	1240	471	...		0.163482	0.210191	0.496815	
249	1959	652	...		0.104294	0.292945	0.501534	
386	1402	582	...		0.070447	0.300687	0.513746	
388	1873	694	...		0.079251	0.247839	0.553314	
nr_obwodu								
355	0.0	0.073171			0.0	0.070461		
376	0.0	0.062595			0.0	0.053435		
401	0.0	0.085526			0.0	0.049342		
354	0.0	0.071006			0.0	0.062130		
423	0.0	0.062678			0.0	0.085470		
379	0.0	0.100733			0.0	0.091575		
222	0.0	0.087413			0.0	0.083916		
362	0.0	0.071795			0.0	0.083761		
369	0.0	0.050251			0.0	0.090452		
361	0.0	0.050179			0.0	0.050179		
30	0.0	0.031955			0.0	0.082707		

322	0.0	0.052381	0.0	0.080952
387	0.0	0.038732	0.0	0.204225
390	0.0	0.046036	0.0	0.084399
181	0.0	0.020270	0.0	0.031532
225	0.0	0.037328	0.0	0.058939
422	0.0	0.050955	0.0	0.078556
249	0.0	0.039877	0.0	0.061350
386	0.0	0.051546	0.0	0.063574
388	0.0	0.064841	0.0	0.054755

nr_obwodu		granice	lat \
355	osiedle na lotnisku 3, od 7 do 18a, króla	49.984661	
376	osiedle kazimierzowskie od 1 do 15, spytka z ...	50.083241	
401	osiedle szklane domy	50.075180	
354	osiedle na lotnisku 1, 2, 4, 6, od 19 do 21	50.087294	
423	bartnicza, betonowa, biwakowa, brzeska, droys...	50.056126	
379	osiedle na wzgórzach od 1 do 10, od 36 do 44, 59	50.092577	
222	bochenka (bez 12), podedworze 6, 6 a, 8, 10, 1...	50.010922	
362	osiedle kalinowe od 18 do 24	50.090409	
369	osiedle przy arce od 9 do 12 i 14	50.083540	
361	osiedle kalinowe od 12 do 17	50.092445	
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068897	
322	cichociemnych ak, ciepownicza, cuplowa, do wi...	50.060980	
387	blokowa, burzowa, darwina parzyste od 6 i niep...	50.090246	
390	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621	
181	batalionów chopskich, braterstwa broni, czwar...	50.015669	
225	bogosawionej franciszki siedliskiej, cehowa...	50.006299	
422	barwinkowa, ciekowiec, czeczeska 7, 9, 11, 13...	50.075303	
249	agatowa, ametystowa, domagay, magazynowa 5, m...	50.021984	
386	birkuta, boywoja, bukszpanowa, cieliskiej-b...	50.107421	
388	betlejemska, braci polskich, brunicka, bystro...	50.104827	

nr_obwodu	lon
355	19.913213
376	20.023827
401	20.042744
354	20.016875
423	20.186218
379	20.059875
222	19.974225
362	20.011694
369	20.027839
361	20.015014
30	19.938534
322	19.992437
387	20.072984

```

390      20.159313
181      19.871192
225      19.965907
422      20.154414
249      20.042078
386      20.080681
388      20.112533

```

[20 rows x 21 columns]

In [11]: df\_res\_rada2010.sort\_values("pis\_proc").head(20)

	year	majchrowski	po	pis	gibal	lewica	berkowicz	inni	\
nr_obwodu									
252	2010	282	163	78	0	14	0	158	
200	2010	198	186	55	0	18	0	25	
202	2010	275	127	69	0	24	0	39	
201	2010	73	330	76	0	23	0	38	
172	2010	72	527	114	0	29	0	68	
216	2010	477	280	136	0	24	0	41	
170	2010	85	329	83	0	28	0	47	
250	2010	217	192	107	0	40	0	172	
116	2010	143	421	119	0	68	0	52	
167	2010	33	137	44	0	7	0	75	
289	2010	250	273	114	0	61	0	66	
253	2010	196	197	86	0	17	0	68	
188	2010	131	365	114	0	74	0	60	
34	2010	73	381	101	0	61	0	43	
115	2010	71	294	80	0	31	0	42	
241	2010	52	263	73	0	32	0	50	
173	2010	100	604	147	0	40	0	55	
274	2010	46	438	114	0	53	0	79	
23	2010	46	169	49	0	22	0	26	
114	2010	34	420	101	0	23	0	60	
nr_obwodu		max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\
252		1471	695	...		0.405755	0.234532	0.112230	
200		1145	482	...		0.410788	0.385892	0.114108	
202		1436	534	...		0.514981	0.237828	0.129213	
201		1212	540	...		0.135185	0.611111	0.140741	
172		1707	810	...		0.088889	0.650617	0.140741	
216		1693	958	...		0.497912	0.292276	0.141962	
170		1182	572	...		0.148601	0.575175	0.145105	
250		1756	728	...		0.298077	0.263736	0.146978	
116		2087	803	...		0.178082	0.524284	0.148194	
167		597	296	...		0.111486	0.462838	0.148649	
289		1792	764	...		0.327225	0.357330	0.149215	

253	1276	564	...	0.347518	0.349291	0.152482
188	1647	744	...	0.176075	0.490591	0.153226
34	1319	659	...	0.110774	0.578149	0.153263
115	1589	518	...	0.137066	0.567568	0.154440
241	1034	470	...	0.110638	0.559574	0.155319
173	2063	946	...	0.105708	0.638478	0.155391
274	1755	730	...	0.063014	0.600000	0.156164
23	624	312	...	0.147436	0.541667	0.157051
114	1294	638	...	0.053292	0.658307	0.158307

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
252	0.0	0.020144		0.0	0.227338
200	0.0	0.037344		0.0	0.051867
202	0.0	0.044944		0.0	0.073034
201	0.0	0.042593		0.0	0.070370
172	0.0	0.035802		0.0	0.083951
216	0.0	0.025052		0.0	0.042797
170	0.0	0.048951		0.0	0.082168
250	0.0	0.054945		0.0	0.236264
116	0.0	0.084682		0.0	0.064757
167	0.0	0.023649		0.0	0.253378
289	0.0	0.079843		0.0	0.086387
253	0.0	0.030142		0.0	0.120567
188	0.0	0.099462		0.0	0.080645
34	0.0	0.092564		0.0	0.065250
115	0.0	0.059846		0.0	0.081081
241	0.0	0.068085		0.0	0.106383
173	0.0	0.042283		0.0	0.058140
274	0.0	0.072603		0.0	0.108219
23	0.0	0.070513		0.0	0.083333
114	0.0	0.036050		0.0	0.094044

nr_obwodu	granice	lat	\
252	bieranowska parzyste od 250, bogucicka, braci ...	50.017792	
200	chodna, kociuszkowców, kowalska, krochmalnik...	50.018081	
202	goryczkowa, jagodowa parzyste od 2 do 12 i nie...	50.014776	
201	borkowskie bonia, cesarza, doktora uczyskie...	50.013747	
172	chmieleniec, szuwarowa	50.020481	
216	armii kraków, biaostocka, bieszczadzka, ciech...	50.086637	
170	burgundzka, gwiedzista, kobierzyska nieparzy...	50.011101	
250	czarnochowicka, flanka, gerberowa, grzecha, ha...	50.009406	
116	aleja 29 listopada od 161 do 214, 224, 226, ar...	50.061947	
167	aleja waszyngtona, anczyca, benedyktowicza, bi...	50.057553	
289	lipska nieparzyste, may paszów, myliwska pa...	50.040574	
253	bieranowska nieparzyste od 155 i parzyste od 1...	50.021810	
188	ceglarska, kapelanka nieparzyste od 23 do 29 i...	50.036643	

```

34      aleja pk. beliny-pramowskiego nieparzyste od... 50.069045
115      kunicy kotajowskiej parzyste od 18 i niepa... 50.098151
241      turniejowa nieparzyste od 59 i parzyste od 62 ... 50.010733
173      czerwone maki 49, 53, 55, 57, 59, 61, 69, 71, ... 50.014981
274      bieanowska 78, 78 a, 80, 80 a, 82, 82 a, 84, ... 50.023222
23       aleja mickiewicza nieparzyste od 41 do 63, gra... 50.067017
114      arsena, banacha, belwederczyków, bibicka, do... 50.065126

```

	lon
nr_obwodu	
252	20.032043
200	19.926870
202	19.920190
201	19.911173
172	19.898014
216	19.891589
170	19.905284
250	20.062926
116	19.936856
167	19.874972
289	19.983726
253	20.011817
188	19.925422
34	19.965695
115	19.954291
241	19.960294
173	19.888748
274	19.996369
23	19.927601
114	19.940302

[20 rows x 21 columns]

## wybory prezydenckie

In [7]: #majchrowski

```
df_res_pres2010.sort_values("majchrowski_proc").tail(20)
```

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
291	2010	254	157	84	0	0	0	20	
242	2010	480	285	176	0	0	0	29	
348	2010	298	165	123	0	0	0	14	
109	2010	471	290	163	0	0	0	24	
234	2010	168	86	79	0	0	0	5	
280	2010	326	163	147	0	0	0	14	
289	2010	406	258	118	0	0	0	23	
131	2010	262	153	87	0	0	0	16	

246	2010	300	176	101	0	0	0	16
312	2010	391	246	107	0	0	0	22
230	2010	328	163	138	0	0	0	11
247	2010	359	161	154	0	0	0	24
232	2010	222	116	74	0	0	0	17
264	2010	209	98	76	0	0	0	8
47	2010	239	138	64	0	0	0	6
106	2010	506	269	146	0	0	0	24
110	2010	248	98	95	0	0	0	16
290	2010	244	117	66	0	0	0	18
231	2010	274	134	76	0	0	0	15
89	2010	200	75	67	0	0	0	6

nr_obwodu	max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
291	1216	515	...	0.493204	0.304854	0.163107	
242	2222	970	...	0.494845	0.293814	0.181443	
348	1833	600	...	0.496667	0.275000	0.205000	
109	2034	948	...	0.496835	0.305907	0.171941	
234	1053	338	...	0.497041	0.254438	0.233728	
280	1744	650	...	0.501538	0.250769	0.226154	
289	1792	805	...	0.504348	0.320497	0.146584	
131	1081	518	...	0.505792	0.295367	0.167954	
246	1435	593	...	0.505902	0.296796	0.170320	
312	2116	766	...	0.510444	0.321149	0.139687	
230	1739	640	...	0.512500	0.254688	0.215625	
247	1727	698	...	0.514327	0.230659	0.220630	
232	1045	429	...	0.517483	0.270396	0.172494	
264	1027	391	...	0.534527	0.250639	0.194373	
47	1018	447	...	0.534676	0.308725	0.143177	
106	2020	945	...	0.535450	0.284656	0.154497	
110	1238	457	...	0.542670	0.214442	0.207877	
290	910	445	...	0.548315	0.262921	0.148315	
231	1305	499	...	0.549098	0.268537	0.152305	
89	1015	348	...	0.574713	0.215517	0.192529	

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
291	0.0	0.0	0.0	0.038835	
242	0.0	0.0	0.0	0.029897	
348	0.0	0.0	0.0	0.023333	
109	0.0	0.0	0.0	0.025316	
234	0.0	0.0	0.0	0.014793	
280	0.0	0.0	0.0	0.021538	
289	0.0	0.0	0.0	0.028571	
131	0.0	0.0	0.0	0.030888	
246	0.0	0.0	0.0	0.026981	
312	0.0	0.0	0.0	0.028721	

230	0.0	0.0	0.0	0.017188
247	0.0	0.0	0.0	0.034384
232	0.0	0.0	0.0	0.039627
264	0.0	0.0	0.0	0.020460
47	0.0	0.0	0.0	0.013423
106	0.0	0.0	0.0	0.025397
110	0.0	0.0	0.0	0.035011
290	0.0	0.0	0.0	0.040449
231	0.0	0.0	0.0	0.030060
89	0.0	0.0	0.0	0.017241

nr_obwodu	granice	lat \
291	bagrowa, biskupiska, brandla, danałówka 37, 3...	50.035668
242	wysouchów nieparzyste od 11 do 43, 47, 49, 49...	50.009363
348	osiedle piastów od 18 do 28, osiedle mistrzejo...	50.098065
109	kluczborska, krowoderskich zuchów 4, 11, 13, 1...	50.087032
234	biaoruska 15, 17, 19, lirników, nowosdecka n...	50.015486
280	facimiech, okólna parzyste od 20 do 28, poloni...	50.015352
289	lipska nieparzyste, may paszów, myliwska pa...	50.040574
131	józefitów od 14 do 21, konarskiego od 39 do 54...	50.070480
246	goaka nieparzyste od 1 do 41	50.014749
312	aleja jana pawa ii parzyste od 128 do 196, bi...	50.074157
230	andrychowska, gromady grudzi, karpiskiego, ...	50.019925
247	beskidzka parzyste, dobczycka, goaka parzyst...	50.013936
232	heila	50.022734
264	jerzmanowskiego parzyste od 18 do 26, teligi p...	50.015173
47	fabryczna nieparzyste od 1 do 3 parzyste od 2 ...	50.058646
106	bliska, bukietowa, jordanowska, na chaupkach,...	50.091369
110	krowoderskich zuchów 3, 3a, 5, 7, 9, wybickiego 2	50.085498
290	batki, goszczyńskiego, iowa, kacza, kolejowa ...	50.036244
231	bystra, gminna, jastrzbia, klonowica, kotsisa...	50.020073
89	puaka parzyste od 2 do 8 i nieparzyste od 3 d...	50.084095

nr_obwodu	lon
291	20.000199
242	19.950729
348	20.018943
109	19.931755
234	19.968359
280	19.987325
289	19.983726
131	19.923684
246	19.950994
312	20.007550
230	19.956976
247	19.949871

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232      19.957926
264      20.011414
47       19.970494
106     19.916733
110     19.930038
290     19.985703
231     19.949644
89      19.904992

```

[20 rows x 21 columns]

In [7]: df\_res\_pres2010.sort\_values("majchrowski\_proc").head(20)

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
423	2010	48	318	32	0	0	0	2	
420	2010	142	355	167	0	0	0	13	
390	2010	103	243	88	0	0	0	3	
422	2010	120	287	97	0	0	0	5	
424	2010	29	70	19	0	0	0	2	
322	2010	55	86	72	0	0	0	6	
183	2010	190	263	252	0	0	0	21	
141	2010	140	218	159	0	0	0	14	
30	2010	149	157	226	0	0	0	14	
185	2010	242	421	159	0	0	0	43	
225	2010	149	160	193	0	0	0	19	
167	2010	89	139	60	0	0	0	18	
152	2010	159	241	125	0	0	0	8	
16	2010	191	259	154	0	0	0	35	
15	2010	162	203	154	0	0	0	14	
172	2010	252	428	99	0	0	0	42	
219	2010	299	441	203	0	0	0	30	
386	2010	185	201	198	0	0	0	13	
173	2010	297	510	114	0	0	0	32	
29	2010	93	112	75	0	0	0	17	
nr_obwodu	max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\	
423	944	400	...		0.120000	0.795000	0.080000		
420	1572	677	...		0.209749	0.524372	0.246677		
390	1365	437	...		0.235698	0.556064	0.201373		
422	1240	509	...		0.235756	0.563851	0.190570		
424	345	120	...		0.241667	0.583333	0.158333		
322	619	219	...		0.251142	0.392694	0.328767		
183	2132	726	...		0.261708	0.362259	0.347107		
141	1024	531	...		0.263653	0.410546	0.299435		
30	1125	546	...		0.272894	0.287546	0.413919		
185	1727	865	...		0.279769	0.486705	0.183815		

225	1185	521	...	0.285988	0.307102	0.370441
167	597	306	...	0.290850	0.454248	0.196078
152	959	533	...	0.298311	0.452158	0.234522
16	1264	639	...	0.298905	0.405321	0.241002
15	1059	533	...	0.303940	0.380863	0.288931
172	1707	821	...	0.306943	0.521315	0.120585
219	1997	973	...	0.307297	0.453237	0.208633
386	1402	597	...	0.309883	0.336683	0.331658
173	2063	953	...	0.311647	0.535152	0.119622
29	660	297	...	0.313131	0.377104	0.252525

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
423	0.0	0.0	0.0	0.005000	
420	0.0	0.0	0.0	0.019202	
390	0.0	0.0	0.0	0.006865	
422	0.0	0.0	0.0	0.009823	
424	0.0	0.0	0.0	0.016667	
322	0.0	0.0	0.0	0.027397	
183	0.0	0.0	0.0	0.028926	
141	0.0	0.0	0.0	0.026365	
30	0.0	0.0	0.0	0.025641	
185	0.0	0.0	0.0	0.049711	
225	0.0	0.0	0.0	0.036468	
167	0.0	0.0	0.0	0.058824	
152	0.0	0.0	0.0	0.015009	
16	0.0	0.0	0.0	0.054773	
15	0.0	0.0	0.0	0.026266	
172	0.0	0.0	0.0	0.051157	
219	0.0	0.0	0.0	0.030832	
386	0.0	0.0	0.0	0.021776	
173	0.0	0.0	0.0	0.033578	
29	0.0	0.0	0.0	0.057239	

nr_obwodu	granice	lat	\
423	bartnicza, betonowa, biwakowa, brzeska, droys...	50.056126	
420	bardosa, graniczna, grby, hutnika, jagienki, ...	50.067745	
390	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621	
422	barwinkowa, ciekowiec, czeczeska 7, 9, 11, 13...	50.075303	
424	cementowa, dymarek. gwarecka, igoomska od 1 d...	50.073431	
322	cichociemnych ak, ciepownicza, cuplowa, do wi...	50.060980	
183	bagienna, benedyktyksa, bogucianka, bolesawa...	50.008224	
141	osiedle zota podkowa, boy-a-eleskiego, gener...	50.083180	
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068897	
185	baanki, wikowa, ekielskiego, harasymowicza,...	50.032638	
225	bogosawionej franciszki siedliskiej, cehowa...	50.006299	
167	aleja waszyngtona, anczyca, benedyktowicza, bi...	50.057553	

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152      drzymay, kunickiego, mysakowskiego (bez 13),... 50.073954
16      bracka, franciszkaska 1 i 3, gobia, grodzka... 50.060592
15      floriaska, may rynek, mikoajska, na gródku,... 50.063437
172          chmieleniec, szuarowa 50.020481
219      amarantowa, banachiewicza, bellerta, boratysk... 49.999288
386      birkuta, boywoja, bukszpanowa, cieliskiej-b... 50.107421
173      czerwone maki 49, 53, 55, 57, 59, 61, 69, 71, ... 50.014981
29      duga nieparzyste od 31 do 55 i parzyste od 40... 50.069596

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	lon
nr_obwodu	
423	20.186218
420	20.063862
390	20.159313
422	20.154414
424	20.116874
322	19.992437
183	19.838952
141	19.878038
30	19.938534
185	19.892087
225	19.965907
167	19.874972
152	19.892708
16	19.936331
15	19.940282
172	19.898014
219	19.906510
386	20.080681
173	19.888748
29	19.937954

[20 rows x 21 columns]

In [10]: #po  
df\_res\_pres2010.sort\_values("po\_proc").tail(20)

Out[10]:

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
167	2010	89	139	60	0	0	0	18	
311	2010	176	227	81	0	0	0	12	
249	2010	221	313	113	0	0	0	21	
82	2010	209	270	72	0	0	0	22	
97	2010	213	265	73	0	0	0	11	
241	2010	170	228	60	0	0	0	25	
23	2010	109	154	48	0	0	0	6	
170	2010	192	284	86	0	0	0	22	
185	2010	242	421	159	0	0	0	43	

171	2010	158	232	70	0	0	0	12
22	2010	121	181	55	0	0	0	9
421	2010	88	139	44	0	0	0	1
201	2010	176	286	71	0	0	0	16
172	2010	252	428	99	0	0	0	42
420	2010	142	355	167	0	0	0	13
173	2010	297	510	114	0	0	0	32
390	2010	103	243	88	0	0	0	3
422	2010	120	287	97	0	0	0	5
424	2010	29	70	19	0	0	0	2
423	2010	48	318	32	0	0	0	2

nr_obwodu	max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
167	597	306	...	0.290850	0.454248	0.196078	
311	1087	496	...	0.354839	0.457661	0.163306	
249	1959	668	...	0.330838	0.468563	0.169162	
82	1259	573	...	0.364747	0.471204	0.125654	
97	1091	562	...	0.379004	0.471530	0.129893	
241	1034	483	...	0.351967	0.472050	0.124224	
23	624	317	...	0.343849	0.485804	0.151420	
170	1182	584	...	0.328767	0.486301	0.147260	
185	1727	865	...	0.279769	0.486705	0.183815	
171	1118	472	...	0.334746	0.491525	0.148305	
22	847	366	...	0.330601	0.494536	0.150273	
421	721	272	...	0.323529	0.511029	0.161765	
201	1212	549	...	0.320583	0.520947	0.129326	
172	1707	821	...	0.306943	0.521315	0.120585	
420	1572	677	...	0.209749	0.524372	0.246677	
173	2063	953	...	0.311647	0.535152	0.119622	
390	1365	437	...	0.235698	0.556064	0.201373	
422	1240	509	...	0.235756	0.563851	0.190570	
424	345	120	...	0.241667	0.583333	0.158333	
423	944	400	...	0.120000	0.795000	0.080000	

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
167	0.0	0.0	0.0	0.058824	
311	0.0	0.0	0.0	0.024194	
249	0.0	0.0	0.0	0.031437	
82	0.0	0.0	0.0	0.038394	
97	0.0	0.0	0.0	0.019573	
241	0.0	0.0	0.0	0.051760	
23	0.0	0.0	0.0	0.018927	
170	0.0	0.0	0.0	0.037671	
185	0.0	0.0	0.0	0.049711	
171	0.0	0.0	0.0	0.025424	
22	0.0	0.0	0.0	0.024590	

421	0.0	0.0	0.0	0.003676		
201	0.0	0.0	0.0	0.029144		
172	0.0	0.0	0.0	0.051157		
420	0.0	0.0	0.0	0.019202		
173	0.0	0.0	0.0	0.033578		
390	0.0	0.0	0.0	0.006865		
422	0.0	0.0	0.0	0.009823		
424	0.0	0.0	0.0	0.016667		
423	0.0	0.0	0.0	0.005000		
					granice	lat \
nr_obwodu						
167	aleja waszyngtona, anczyca, benedyktowicza, bi...	50.057553				
311	centralna 3, 20, 22, 24, 26, dolna, dolnomys...	50.063910				
249	agatowa, ametystowa, domagay, magazynowa 5, m...	50.021984				
82	biskupa gawliny, chemoskiego od 70a, chmurna...	50.090804				
97	jaracza 3, 4, 6, 7, 9, 10, 11, 12, 14, 16, 20,...	50.067050				
241	turniejowa nieparzyste od 59 i parzyste od 62 ...	50.010733				
23	aleja mickiewicza nieparzyste od 41 do 63, gra...	50.067017				
170	burgundzka, gwiedzista, kobierzyska nieparzy...	50.011101				
185	baanki, wikowa, ekielskiego, harasymowicza,...	50.032638				
171	anusia, babinicza, billewiczów, braci kiemliczó...	50.001191				
22	aleja mickiewicza nieparzyste od 25 do 37, cza...	50.065331				
421	branicka, chaupki, deszczowa, generaia karasz...	50.057891				
201	borkowskie bonia, cesarza, doktora uczyskie...	50.013747				
172	chmieleniec, szuwarowa	50.020481				
420	bardosa, graniczna, grby, hutnika, jagienki, ...	50.067745				
173	czerwone maki 49, 53, 55, 57, 59, 61, 69, 71, ...	50.014981				
390	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621				
422	barwinkowa, ciekowiec, czeczeska 7, 9, 11, 13...	50.075303				
424	cementowa, dymarek. gwarecka, igoomska od 1 d...	50.073431				
423	bartnicza, betonowa, biwakowa, brzeska, droys...	50.056126				
	lon					
nr_obwodu						
167	19.874972					
311	19.927536					
249	20.042078					
82	19.906077					
97	19.935776					
241	19.960294					
23	19.927601					
170	19.905284					
185	19.892087					
171	19.896995					
22	19.927495					
421	20.118626					
201	19.911173					

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172      19.898014
420      20.063862
173      19.888748
390      20.159313
422      20.154414
424      20.116874
423      20.186218

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[20 rows x 21 columns]

In [15]: df\_res\_pres2010.sort\_values("po\_proc").head(20)

	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
nr_obwodu									
371	2010	87	39	61	0	0	0	8	
380	2010	129	61	104	0	0	0	5	
110	2010	248	98	95	0	0	0	16	
89	2010	200	75	67	0	0	0	6	
211	2010	72	40	55	0	0	0	7	
247	2010	359	161	154	0	0	0	24	
93	2010	179	90	106	0	0	0	8	
88	2010	205	113	150	0	0	0	9	
365	2010	225	132	189	0	0	0	9	
360	2010	177	92	108	0	0	0	8	
264	2010	209	98	76	0	0	0	8	
280	2010	326	163	147	0	0	0	14	
222	2010	123	74	90	0	0	0	6	
92	2010	144	83	91	0	0	0	10	
234	2010	168	86	79	0	0	0	5	
230	2010	328	163	138	0	0	0	11	
305	2010	72	44	48	0	0	0	7	
335	2010	254	164	197	0	0	0	22	
418	2010	346	203	216	0	0	0	22	
204	2010	527	298	285	0	0	0	38	
nr_obwodu		max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\
371		508	195	...		0.446154	0.200000	0.312821	
380		953	299	...		0.431438	0.204013	0.347826	
110		1238	457	...		0.542670	0.214442	0.207877	
89		1015	348	...		0.574713	0.215517	0.192529	
211		583	174	...		0.413793	0.229885	0.316092	
247		1727	698	...		0.514327	0.230659	0.220630	
93		1155	383	...		0.467363	0.234987	0.276762	
88		1172	477	...		0.429769	0.236897	0.314465	
365		1412	555	...		0.405405	0.237838	0.340541	
360		1211	385	...		0.459740	0.238961	0.280519	
264		1027	391	...		0.534527	0.250639	0.194373	

280	1744	650	...	0.501538	0.250769	0.226154
222	691	293	...	0.419795	0.252560	0.307167
92	872	328	...	0.439024	0.253049	0.277439
234	1053	338	...	0.497041	0.254438	0.233728
230	1739	640	...	0.512500	0.254688	0.215625
305	534	171	...	0.421053	0.257310	0.280702
335	1573	637	...	0.398744	0.257457	0.309262
418	1714	787	...	0.439644	0.257942	0.274460
204	2388	1148	...	0.459059	0.259582	0.248258

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
371	0.0	0.0	0.0	0.041026	
380	0.0	0.0	0.0	0.016722	
110	0.0	0.0	0.0	0.035011	
89	0.0	0.0	0.0	0.017241	
211	0.0	0.0	0.0	0.040230	
247	0.0	0.0	0.0	0.034384	
93	0.0	0.0	0.0	0.020888	
88	0.0	0.0	0.0	0.018868	
365	0.0	0.0	0.0	0.016216	
360	0.0	0.0	0.0	0.020779	
264	0.0	0.0	0.0	0.020460	
280	0.0	0.0	0.0	0.021538	
222	0.0	0.0	0.0	0.020478	
92	0.0	0.0	0.0	0.030488	
234	0.0	0.0	0.0	0.014793	
230	0.0	0.0	0.0	0.017188	
305	0.0	0.0	0.0	0.040936	
335	0.0	0.0	0.0	0.034537	
418	0.0	0.0	0.0	0.027954	
204	0.0	0.0	0.0	0.033101	

nr_obwodu	granice	lat	\
371	osiedle przy arce od 20 do 26, batalionu parasol	50.081689	
380	osiedle na wzgórzach od 11 do 13a, od 28 do 35	50.095532	
110	krowoderskich zuchów 3, 3a, 5, 7, 9, wybickiego 2	50.085498	
89	puaka parzyste od 2 do 8 i nieparzyste od 3 d...	50.084095	
211	goba, lei, matematyków krakowskich parzyste ...	49.975544	
247	beskidzka parzyste, dobczycka, goaka parzyst...	50.013936	
93	makowskiego 1, 5, 8, 18, modrzejowskiej parzys...	50.087419	
88	gnienieska parzyste od 18b do 26, jaremy 12,...	50.086791	
365	osiedle albertyskie od 12 do 21	50.081621	
360	osiedle kalinowe od 1 do 11	50.091066	
264	jerzmanowskiego parzyste od 18 do 26, teligi p...	50.015173	
280	facimiech, okólna parzyste od 20 do 28, poloni...	50.015352	
222	bochenka (bez 12), podedworze 6, 6 a, 8, 10, 1...	50.010922	

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92                               palacha 50.089437
234      biaoruska 15, 17, 19, lirników, nowosdecka n... 50.015486
230      andrychowska, gromady grudzi, karpiskiego, ... 50.019925
305      dekerta, herlinga-grudziskiego, kiekowskiego... 50.047270
335          osiedle zotego wieku od 1 do 15 50.099106
418          osiedle kolorowe od 16 do 47/bez 17a/ 50.073668
204      chmielna nieparzyste, chochoowska, do sanktua... 50.013359

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	lon
nr_obwodu	
371	20.028084
380	20.060730
110	19.930038
89	19.904992
211	19.963568
247	19.949871
93	19.920443
88	19.907148
365	20.017818
360	20.016400
264	20.011414
280	19.987325
222	19.974225
92	19.917954
234	19.968359
230	19.956976
305	19.967155
335	19.996391
418	20.023396
204	19.946276

[20 rows x 21 columns]

In [26]: #pis  
df\_res\_pres2010.sort\_values("pis\_proc").tail(20)

Out[26]:

	year	majchrowski	po	pis	gibalala	lesniak	berkowicz	inni	\
nr_obwodu									
211	2010	72	40	55	0	0	0	7	
379	2010	218	155	188	0	0	0	20	
377	2010	193	151	172	0	0	0	11	
322	2010	55	86	72	0	0	0	6	
359	2010	179	170	180	0	0	0	17	
369	2010	140	126	139	0	0	0	15	
386	2010	185	201	198	0	0	0	13	
362	2010	229	163	208	0	0	0	21	
7	2010	242	167	216	0	0	0	17	
354	2010	119	105	120	0	0	0	11	

401	2010	113	92	107	0	0	0	3
365	2010	225	132	189	0	0	0	9
21	2010	169	142	176	0	0	0	29
10	2010	124	111	131	0	0	0	12
183	2010	190	263	252	0	0	0	21
380	2010	129	61	104	0	0	0	5
376	2010	229	184	242	0	0	0	25
225	2010	149	160	193	0	0	0	19
361	2010	103	81	121	0	0	0	5
30	2010	149	157	226	0	0	0	14

nr_obwodu	max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
211	583	174	...	0.413793	0.229885	0.316092	
379	1772	581	...	0.375215	0.266781	0.323580	
377	1468	527	...	0.366224	0.286528	0.326376	
322	619	219	...	0.251142	0.392694	0.328767	
359	1505	546	...	0.327839	0.311355	0.329670	
369	1064	420	...	0.333333	0.300000	0.330952	
386	1402	597	...	0.309883	0.336683	0.331658	
362	1812	621	...	0.368760	0.262480	0.334944	
7	1498	642	...	0.376947	0.260125	0.336449	
354	1076	355	...	0.335211	0.295775	0.338028	
401	775	315	...	0.358730	0.292063	0.339683	
365	1412	555	...	0.405405	0.237838	0.340541	
21	1156	516	...	0.327519	0.275194	0.341085	
10	844	378	...	0.328042	0.293651	0.346561	
183	2132	726	...	0.261708	0.362259	0.347107	
380	953	299	...	0.431438	0.204013	0.347826	
376	1881	680	...	0.336765	0.270588	0.355882	
225	1185	521	...	0.285988	0.307102	0.370441	
361	1096	310	...	0.332258	0.261290	0.390323	
30	1125	546	...	0.272894	0.287546	0.413919	

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
211	0.0	0.0	0.0	0.040230	
379	0.0	0.0	0.0	0.034423	
377	0.0	0.0	0.0	0.020873	
322	0.0	0.0	0.0	0.027397	
359	0.0	0.0	0.0	0.031136	
369	0.0	0.0	0.0	0.035714	
386	0.0	0.0	0.0	0.021776	
362	0.0	0.0	0.0	0.033816	
7	0.0	0.0	0.0	0.026480	
354	0.0	0.0	0.0	0.030986	
401	0.0	0.0	0.0	0.009524	
365	0.0	0.0	0.0	0.016216	

21	0.0	0.0	0.0	0.056202		
10	0.0	0.0	0.0	0.031746		
183	0.0	0.0	0.0	0.028926		
380	0.0	0.0	0.0	0.016722		
376	0.0	0.0	0.0	0.036765		
225	0.0	0.0	0.0	0.036468		
361	0.0	0.0	0.0	0.016129		
30	0.0	0.0	0.0	0.025641		
granice      lat \						
nr_obwodu						
211	goba, lei, matematyków krakowskich parzyste ...	49.975544				
379	osiedle na wzgórzach od 1 do 10, od 36 do 44, 59	50.092577				
377	osiedle kazimierzowskie od 18 do 25, elbiety ...	50.086120				
322	cichociemnych ak, ciepownicza, cuplowa, do wi...	50.060980				
359	osiedle strusia od 13 do 20, bogusza	50.088419				
369	osiedle przy arce od 9 do 12 i 14	50.083540				
386	birkuta, boywoja, bukszpanowa, cieliskiej-b...	50.107421				
362	osiedle kalinowe od 18 do 24	50.090409				
7	augustiaska nieparzyste od 7 do 21 i parzyste...	50.049284				
354	osiedle na lotnisku 1, 2, 4, 6, od 19 do 21	50.087294				
401	osiedle szklane domy	50.075180				
365	osiedle albertyskie od 12 do 21	50.081621				
21	czapskich, garncarska parzyste od 2 do 26, jab...	50.060594				
10	dominińska, franciszkaska 2 i 4, grodzka ni...	50.059053				
183	bagienna, benedyktyska, bogucianka, bolesawa...	50.008224				
380	osiedle na wzgórzach od 11 do 13a, od 28 do 35	50.095532				
376	osiedle kazimierzowskie od 1 do 15, spytka z ...	50.083241				
225	bogosawionej franciszki siedliskiej, cechowa...	50.006299				
361	osiedle kalinowe od 12 do 17	50.092445				
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068897				
lon						
nr_obwodu						
211	19.963568					
379	20.059875					
377	20.024487					
322	19.992437					
359	20.007876					
369	20.027839					
386	20.080681					
362	20.011694					
7	19.940905					
354	20.016875					
401	20.042744					
365	20.017818					
21	19.930080					
10	19.939726					

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183      19.838952
380      20.060730
376      20.023827
225      19.965907
361      20.015014
30       19.938534

```

[20 rows x 21 columns]

In [29]: df\_res\_pres2010.sort\_values("pis\_proc").head(20)

nr_obwodu	year	majchrowski	po	pis	gibalala	lesniak	berkowicz	inni	\
423	2010	48	318	32	0	0	0	2	
173	2010	297	510	114	0	0	0	32	
172	2010	252	428	99	0	0	0	42	
241	2010	170	228	60	0	0	0	25	
82	2010	209	270	72	0	0	0	22	
116	2010	348	353	104	0	0	0	18	
188	2010	331	290	96	0	0	0	39	
201	2010	176	286	71	0	0	0	16	
97	2010	213	265	73	0	0	0	11	
115	2010	202	242	74	0	0	0	19	
287	2010	236	251	82	0	0	0	26	
312	2010	391	246	107	0	0	0	22	
175	2010	301	282	98	0	0	0	19	
47	2010	239	138	64	0	0	0	6	
130	2010	163	150	56	0	0	0	15	
289	2010	406	258	118	0	0	0	23	
170	2010	192	284	86	0	0	0	22	
171	2010	158	232	70	0	0	0	12	
290	2010	244	117	66	0	0	0	18	
200	2010	229	184	74	0	0	0	9	
nr_obwodu	max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\	
423	944	400	...		0.120000	0.795000	0.080000		
173	2063	953	...		0.311647	0.535152	0.119622		
172	1707	821	...		0.306943	0.521315	0.120585		
241	1034	483	...		0.351967	0.472050	0.124224		
82	1259	573	...		0.364747	0.471204	0.125654		
116	2087	823	...		0.422843	0.428919	0.126367		
188	1647	756	...		0.437831	0.383598	0.126984		
201	1212	549	...		0.320583	0.520947	0.129326		
97	1091	562	...		0.379004	0.471530	0.129893		
115	1589	537	...		0.376164	0.450652	0.137803		
287	1520	595	...		0.396639	0.421849	0.137815		
312	2116	766	...		0.510444	0.321149	0.139687		

175	1578	700	...	0.430000	0.402857	0.140000
47	1018	447	...	0.534676	0.308725	0.143177
130	847	384	...	0.424479	0.390625	0.145833
289	1792	805	...	0.504348	0.320497	0.146584
170	1182	584	...	0.328767	0.486301	0.147260
171	1118	472	...	0.334746	0.491525	0.148305
290	910	445	...	0.548315	0.262921	0.148315
200	1145	496	...	0.461694	0.370968	0.149194

nr_obwodu	gibal_proc	lesniak_proc	berkowicz_proc	inni_proc	\
423	0.0	0.0	0.0	0.005000	
173	0.0	0.0	0.0	0.033578	
172	0.0	0.0	0.0	0.051157	
241	0.0	0.0	0.0	0.051760	
82	0.0	0.0	0.0	0.038394	
116	0.0	0.0	0.0	0.021871	
188	0.0	0.0	0.0	0.051587	
201	0.0	0.0	0.0	0.029144	
97	0.0	0.0	0.0	0.019573	
115	0.0	0.0	0.0	0.035382	
287	0.0	0.0	0.0	0.043697	
312	0.0	0.0	0.0	0.028721	
175	0.0	0.0	0.0	0.027143	
47	0.0	0.0	0.0	0.013423	
130	0.0	0.0	0.0	0.039062	
289	0.0	0.0	0.0	0.028571	
170	0.0	0.0	0.0	0.037671	
171	0.0	0.0	0.0	0.025424	
290	0.0	0.0	0.0	0.040449	
200	0.0	0.0	0.0	0.018145	

nr_obwodu	granice	lat	\
423	bartnicza, betonowa, biwakowa, brzeska, droys...	50.056126	
173	czerwone maki 49, 53, 55, 57, 59, 61, 69, 71, ...	50.014981	
172	chmieleniec, szuarowa	50.020481	
241	turniejowa nieparzyste od 59 i parzyste od 62 ...	50.010733	
82	biskupa gawliny, chemoskiego od 70a, chmurna...	50.090804	
116	aleja 29 listopada od 161 do 214, 224, 226, ar...	50.061947	
188	ceglarska, kapelanka nieparzyste od 23 do 29 i...	50.036643	
201	borkowskie bonia, cesarza, doktora uczyskie...	50.013747	
97	jaracza 3, 4, 6, 7, 9, 10, 11, 12, 14, 16, 20,...	50.067050	
115	kunicy kotajowskiej parzyste od 18 i niepa...	50.098151	
287	koszykarska, nowohucka 13b, 33, 37, 39, 41, 43...	50.051397	
312	aleja jana pawa ii parzyste od 128 do 196, bi...	50.074157	
175	drukarska, gutenberga, jahody, profesora wini...	50.024219	
47	fabryczna nieparzyste od 1 do 3 parzyste od 2 ...	50.058646	

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130      chopina parzyste od 20 do 38 i nieparzyste od ... 50.068202
289      lipska nieparzyste, may paszów, myliwska pa... 50.040574
170      burgundzka, gwiedzista, kobierzyska nieparzy... 50.011101
171      anusi, babinicza, billewiczów, braci kiemliczó... 50.001191
290      batki, goszczyskiego, iowa, kacza, kolejowa ... 50.036244
200      chodna, kociuszkowców, kowalska, krochmalnik... 50.018081

          lon
nr_obwodu
423      20.186218
173      19.888748
172      19.898014
241      19.960294
82       19.906077
116      19.936856
188      19.925422
201      19.911173
97       19.935776
115      19.954291
287      19.991863
312      20.007550
175      19.901901
47       19.970494
130      19.920990
289      19.983726
170      19.905284
171      19.896995
290      19.985703
200      19.926870

[20 rows x 21 columns]

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### 1.3.3 rok 2014

#### wybory do rady miasta

In [33]: df\_res\_rada2014.sort\_values("po\_proc").tail(20)

Out[33]:

nr_obwodu	year	majchrowski	po	pis	gibal	lewica	berkowicz	inni	\
298	2014	23	108	74	8	13	9	7	
341	2014	33	201	134	14	21	29	16	
87	2014	44	199	120	9	43	24	4	
176	2014	20	126	83	5	21	12	11	
236	2014	63	326	157	34	56	51	27	
181	2014	53	296	105	32	72	43	42	
342	2014	45	239	166	13	19	25	11	
82	2014	104	356	178	26	44	31	26	
60	2014	81	241	121	19	25	17	13	

14	2014	15	113	58	10	9	15	21
161	2014	27	212	115	11	49	20	16
299	2014	69	387	245	23	26	45	17
67	2014	83	420	205	33	49	65	19
295	2014	60	351	183	20	42	32	28
345	2014	37	216	132	11	13	14	10
215	2014	44	121	22	13	21	11	10
234	2014	37	237	99	18	36	33	11
280	2014	31	213	108	10	17	27	17
120	2014	64	317	119	31	46	26	13
90	2014	56	300	86	14	35	23	15

nr_obwodu	max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
298	579	242	...	0.095041	0.446281	0.305785	
341	1078	448	...	0.073661	0.448661	0.299107	
87	1185	443	...	0.099323	0.449210	0.270880	
176	588	278	...	0.071942	0.453237	0.298561	
236	1613	714	...	0.088235	0.456583	0.219888	
181	1516	643	...	0.082426	0.460342	0.163297	
342	1250	518	...	0.086873	0.461390	0.320463	
82	1843	765	...	0.135948	0.465359	0.232680	
60	1103	517	...	0.156673	0.466151	0.234043	
14	619	241	...	0.062241	0.468880	0.240664	
161	852	450	...	0.060000	0.471111	0.255556	
299	1732	812	...	0.084975	0.476601	0.301724	
67	2015	874	...	0.094966	0.480549	0.234554	
295	1816	716	...	0.083799	0.490223	0.255587	
345	1047	433	...	0.085450	0.498845	0.304850	
215	538	242	...	0.181818	0.500000	0.090909	
234	1085	471	...	0.078556	0.503185	0.210191	
280	1012	423	...	0.073286	0.503546	0.255319	
120	1378	616	...	0.103896	0.514610	0.193182	
90	1122	529	...	0.105860	0.567108	0.162571	

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
298	0.033058	0.053719	0.037190	0.028926	
341	0.031250	0.046875	0.064732	0.035714	
87	0.020316	0.097065	0.054176	0.009029	
176	0.017986	0.075540	0.043165	0.039568	
236	0.047619	0.078431	0.071429	0.037815	
181	0.049767	0.111975	0.066874	0.065319	
342	0.025097	0.036680	0.048263	0.021236	
82	0.033987	0.057516	0.040523	0.033987	
60	0.036750	0.048356	0.032882	0.025145	
14	0.041494	0.037344	0.062241	0.087137	
161	0.024444	0.108889	0.044444	0.035556	

299	0.028325	0.032020	0.055419	0.020936			
67	0.037757	0.056064	0.074371	0.021739			
295	0.027933	0.058659	0.044693	0.039106			
345	0.025404	0.030023	0.032333	0.023095			
215	0.053719	0.086777	0.045455	0.041322			
234	0.038217	0.076433	0.070064	0.023355			
280	0.023641	0.040189	0.063830	0.040189			
120	0.050325	0.074675	0.042208	0.021104			
90	0.026465	0.066163	0.043478	0.028355			
					granice	lat \	
nr_obwodu							
298	andrusikiewicza, bielskiego, generaia jasiski...	50.023197					
341	osiedle dywizjonu 303 od 18 do 28	50.083147					
87	chemoskiego od 1 do 41, chemoskiego-deptak...	50.093791					
176	aleja waszyngtona, anczyca, benedyktowicza, bi...	50.057553					
236	anuszi, arktyczna, babinicza, billewiczów, bisk...	50.001191					
181	chmieleniec, szuwarowa 5, 6, 7, 8	50.020481					
342	osiedle dywizjonu 303 od 30 do 44, 76	50.085054					
82	kantora, meissnera 32, liczna	50.072041					
60	majora	50.088427					
14	doktora zamenhofa , kopernika nieparzyste od 1...	50.063549					
161	drzymay, kunickiego, mysakowskiego (bez 13),...	50.073954					
299	aleja dygasiskiego, gersona, kodzka, libera,...	50.022728					
67	antyczna, bachledy, kwartowa, marchota, pana ...	50.092837					
295	bieanowska 78, 78a, 80, 80a, 82, 82a, 84, 84a...	50.023222					
345	osiedle dywizjonu 303 od 1 do 10	50.082063					
215	borkowskie bonia, cesarza, doktora uczyskie...	50.013747					
234	korpala parzyste od 22, mieczykowa, profesora ...	49.998974					
280	maa góra parzyste od 16 (bez 32)	50.009748					
120	arsena, belwederczyków, bibicka, doynkowa, d...	50.065126					
90	podkowiskiego, radzikowskiego nieparzyste od ...	50.085868					
	lon						
nr_obwodu							
298	19.992945						
341	20.005734						
87	19.899648						
176	19.874972						
236	19.896995						
181	19.898014						
342	20.009838						
82	19.974833						
60	19.965380						
14	19.946857						
161	19.892708						
299	19.983402						
67	19.978026						

```

295      19.996369
345      20.004532
215      19.911173
234      19.904118
280      20.020761
120      19.940302
90       19.895309

```

[20 rows x 21 columns]

In [23]: df\_res\_rada2014.sort\_values("po\_proc").head(20)

nr_obwodu	year	majchrowski	po	pis	gibal	lewica	berkowicz	inni	\
415	2014	45	36	208	3	5	9	6	
449	2014	93	36	100	10	2	10	8	
316	2014	102	45	124	6	7	24	9	
416	2014	85	97	407	16	14	31	23	
408	2014	34	37	137	13	8	8	17	
406	2014	100	49	100	10	13	22	12	
224	2014	12	41	152	12	18	14	7	
225	2014	53	63	174	4	54	14	7	
216	2014	128	80	167	13	35	14	19	
219	2014	132	111	247	16	36	37	36	
194	2014	35	87	261	19	17	34	23	
409	2014	58	69	162	31	19	24	13	
223	2014	41	59	170	8	28	6	9	
372	2014	107	124	322	26	10	37	23	
438	2014	78	66	118	12	16	23	21	
414	2014	97	123	295	31	23	30	23	
398	2014	53	94	208	15	28	52	25	
401	2014	42	93	236	18	15	27	27	
322	2014	45	47	50	37	23	14	15	
405	2014	43	87	207	17	11	28	25	
nr_obwodu	max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\	
415	752	312	...		0.144231	0.115385	0.666667		
449	728	259	...		0.359073	0.138996	0.386100		
316	1110	317	...		0.321767	0.141956	0.391167		
416	2042	673	...		0.126300	0.144131	0.604755		
408	892	254	...		0.133858	0.145669	0.539370		
406	660	306	...		0.326797	0.160131	0.326797		
224	712	256	...		0.046875	0.160156	0.593750		
225	815	369	...		0.143631	0.170732	0.471545		
216	1349	456	...		0.280702	0.175439	0.366228		
219	1224	615	...		0.214634	0.180488	0.401626		
194	1223	476	...		0.073529	0.182773	0.548319		

409	1396	376	...	0.154255	0.183511	0.430851
223	676	321	...	0.127726	0.183801	0.529595
372	2057	649	...	0.164869	0.191063	0.496148
438	935	334	...	0.233533	0.197605	0.353293
414	1519	622	...	0.155949	0.197749	0.474277
398	1175	475	...	0.111579	0.197895	0.437895
401	1329	458	...	0.091703	0.203057	0.515284
322	496	231	...	0.194805	0.203463	0.216450
405	1414	418	...	0.102871	0.208134	0.495215

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
415	0.009615	0.016026	0.028846	0.019231	
449	0.038610	0.007722	0.038610	0.030888	
316	0.018927	0.022082	0.075710	0.028391	
416	0.023774	0.020802	0.046062	0.034175	
408	0.051181	0.031496	0.031496	0.066929	
406	0.032680	0.042484	0.071895	0.039216	
224	0.046875	0.070312	0.054688	0.027344	
225	0.010840	0.146341	0.037940	0.018970	
216	0.028509	0.076754	0.030702	0.041667	
219	0.026016	0.058537	0.060163	0.058537	
194	0.039916	0.035714	0.071429	0.048319	
409	0.082447	0.050532	0.063830	0.034574	
223	0.024922	0.087227	0.018692	0.028037	
372	0.040062	0.015408	0.057011	0.035439	
438	0.035928	0.047904	0.068862	0.062874	
414	0.049839	0.036977	0.048232	0.036977	
398	0.031579	0.058947	0.109474	0.052632	
401	0.039301	0.032751	0.058952	0.058952	
322	0.160173	0.099567	0.060606	0.064935	
405	0.040670	0.026316	0.066986	0.059809	

nr_obwodu	granice	lat	\
415	blokowa, burzowa, darwina nieparzyste od 49 i ...	50.090246	
449	branicka, chaupki, deszczowa, generaia karasz...	50.057891	
316	bartników, pukownika barty, bugaj, czeczotta,...	50.038104	
416	betlejemska, braci polskich, brunicka, bystro...	50.104827	
408	osiedle na wzgórzach od 11 do 13 a, od 28 do 35	50.095532	
406	kleinera, kocmyrzowska nieparzyste od 9 do 19 ...	50.080699	
224	berdyczowska, chanieckiej, drubackiej, geolog...	49.982090	
225	bezy, do luboni od 61, droga rokadowa, gdowsk...	49.988245	
216	goryczkowa, jagodowa nieparzyste od 11 do 19 i...	50.014776	
219	chochoowska, do sanktuarium boego miosierdz...	50.019336	
194	benedyktyska, bogucianka od 1 do 41, bolesaw...	50.017279	
409	osiedle na wzgórzach od 14 do 27	50.096597	
223	barycka, bednarska 131, blacharska, gacki, gs...	49.988802	

372	osiedle mistrzejowice 14, osiedle piastów od 1...	50.097022
438	ludmierska, osiedle teatralne od 8 do 24, od ...	50.077439
414	birkuta, boywoja, bukszpanowa, cieliskiej-b...	50.107421
398	fatimska, szybka	50.090187
401	osiedle jagiellońskie od 1 do 8, 27, 37	50.088217
322	aleja dembowskiego, aleja powstaców lskich,...	50.041373
405	elbiety okietkówny, osiedle kazimierzowskie ...	50.085395

	lon
nr_obwodu	
415	20.072984
449	20.118626
316	20.052474
416	20.112533
408	20.060730
406	20.060883
224	19.996654
225	19.973878
216	19.920190
219	19.944125
194	19.806635
409	20.061607
223	20.012650
372	20.021925
438	20.032468
414	20.080681
398	20.029027
401	20.021369
322	19.955957
405	20.021852

[20 rows x 21 columns]

In [44]: df\_res\_rada2014.sort\_values("pis\_proc").tail(20)

Out[44]:

nr_obwodu	year	majchrowski	po	pis	gibal	lewica	berkowicz	inni	\
388	2014	56	117	257	17	17	32	26	
405	2014	43	87	207	17	11	28	25	
372	2014	107	124	322	26	10	37	23	
451	2014	19	78	160	19	7	14	18	
369	2014	41	83	196	17	13	22	13	
192	2014	40	126	238	9	12	26	13	
395	2014	30	79	182	23	10	17	13	
401	2014	42	93	236	18	15	27	27	
243	2014	46	148	287	13	15	33	14	
380	2014	32	71	165	8	10	14	14	
330	2014	51	129	258	11	11	10	18	

450	2014	45	108	254	19	17	19	18
223	2014	41	59	170	8	28	6	9
408	2014	34	37	137	13	8	8	17
365	2014	87	156	378	14	15	32	18
418	2014	33	96	245	15	18	26	18
194	2014	35	87	261	19	17	34	23
224	2014	12	41	152	12	18	14	7
416	2014	85	97	407	16	14	31	23
415	2014	45	36	208	3	5	9	6

nr_obwodu	max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
388	1733	522	...	0.107280	0.224138	0.492337	
405	1414	418	...	0.102871	0.208134	0.495215	
372	2057	649	...	0.164869	0.191063	0.496148	
451	1005	315	...	0.060317	0.247619	0.507937	
369	1071	385	...	0.106494	0.215584	0.509091	
192	1359	464	...	0.086207	0.271552	0.512931	
395	1042	354	...	0.084746	0.223164	0.514124	
401	1329	458	...	0.091703	0.203057	0.515284	
243	1265	556	...	0.082734	0.266187	0.516187	
380	1011	314	...	0.101911	0.226115	0.525478	
330	1413	488	...	0.104508	0.264344	0.528689	
450	1282	480	...	0.093750	0.225000	0.529167	
223	676	321	...	0.127726	0.183801	0.529595	
408	892	254	...	0.133858	0.145669	0.539370	
365	1566	700	...	0.124286	0.222857	0.540000	
418	1434	451	...	0.073171	0.212860	0.543237	
194	1223	476	...	0.073529	0.182773	0.548319	
224	712	256	...	0.046875	0.160156	0.593750	
416	2042	673	...	0.126300	0.144131	0.604755	
415	752	312	...	0.144231	0.115385	0.666667	

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
388	0.032567	0.032567	0.061303	0.049808	
405	0.040670	0.026316	0.066986	0.059809	
372	0.040062	0.015408	0.057011	0.035439	
451	0.060317	0.022222	0.044444	0.057143	
369	0.044156	0.033766	0.057143	0.033766	
192	0.019397	0.025862	0.056034	0.028017	
395	0.064972	0.028249	0.048023	0.036723	
401	0.039301	0.032751	0.058952	0.058952	
243	0.023381	0.026978	0.059353	0.025180	
380	0.025478	0.031847	0.044586	0.044586	
330	0.022541	0.022541	0.020492	0.036885	
450	0.039583	0.035417	0.039583	0.037500	
223	0.024922	0.087227	0.018692	0.028037	

408	0.051181	0.031496	0.031496	0.066929
365	0.020000	0.021429	0.045714	0.025714
418	0.033259	0.039911	0.057650	0.039911
194	0.039916	0.035714	0.071429	0.048319
224	0.046875	0.070312	0.054688	0.027344
416	0.023774	0.020802	0.046062	0.034175
415	0.009615	0.016026	0.028846	0.019231

nr_obwodu	granice	lat \
388	osiedle kalinowe od 18 do 24	50.090409
405	elbiety okietkówny, osiedle kazimierzowskie ...	50.085395
372	osiedle mistrzejowice 14, osiedle piastów od 1...	50.097022
451	bartnicza, betonowa, biwakowa, brzeska, droys...	50.056126
369	osiedle bohaterów wrzenia od 39 do 55	50.098849
192	batalionów chopskich, braterstwa bronii, czwar...	50.015669
395	osiedle przy arce od 9 do 12 i 14	50.083540
401	osiedle jagiellońskie od 1 do 8, 27, 37	50.088217
243	bogosawionej franciszki siedliskiej, cehowa...	50.006299
380	osiedle na lotnisku 1, 2, 4, 6, od 19 do 27	50.087294
330	dworcowa nieparzyste, dworzec, prokocimska, wi...	50.034324
450	barwinkowa, ciekowiec, czeczeska, generaia ka...	50.075303
223	barycka, bednarska 131, blacharska, gacki, gs...	49.988802
408	osiedle na wzgórzach od 11 do 13 a, od 28 do 35	50.095532
365	osiedle zoteciego wieku od 53 do 67, wawelska 6	50.098314
418	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621
194	benedyktyńska, bogucianka od 1 do 41, bolesaw...	50.017279
224	berdyczowska, chanieckiej, drubackiej, geolog...	49.982090
416	betlejemskia, braci polskich, brunicka, bystro...	50.104827
415	blokowa, burzowa, darwina nieparzyste od 49 i ...	50.090246

nr_obwodu	lon
388	20.011694
405	20.021852
372	20.021925
451	20.186218
369	20.009685
192	19.871192
395	20.027839
401	20.021369
243	19.965907
380	20.016875
330	19.973754
450	20.154414
223	20.012650
408	20.060730
365	19.997611

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418      20.159313
194      19.806635
224      19.996654
416      20.112533
415      20.072984

```

[20 rows x 21 columns]

In [46]: df\_res\_rada2014.sort\_values("pis\_proc").head(20)

Out[46]:

nr_obwodu	year	majchrowski	po	pis	gibalala	lewica	berkowicz	inni	\
215	2014	44	121	22	13	21	11	10	
104	2014	60	168	38	32	68	29	10	
101	2014	67	202	76	64	60	36	15	
90	2014	56	300	86	14	35	23	15	
181	2014	53	296	105	32	72	43	42	
119	2014	90	198	127	219	52	36	13	
122	2014	80	160	80	40	52	32	16	
47	2014	110	162	83	16	51	27	25	
23	2014	21	104	42	14	21	11	23	
129	2014	65	124	63	7	58	23	13	
137	2014	39	108	59	24	42	23	23	
123	2014	62	64	47	22	29	20	7	
91	2014	58	162	82	22	71	32	10	
85	2014	84	331	145	39	106	38	26	
20	2014	31	103	48	9	22	18	23	
214	2014	145	170	111	34	51	30	38	
121	2014	45	174	77	18	47	32	8	
120	2014	64	317	119	31	46	26	13	
124	2014	123	220	128	76	68	29	13	
108	2014	77	177	98	38	51	35	12	
nr_obwodu	max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\	
215	538	242	...		0.181818	0.500000	0.090909		
104	954	405	...		0.148148	0.414815	0.093827		
101	1107	520	...		0.128846	0.388462	0.146154		
90	1122	529	...		0.105860	0.567108	0.162571		
181	1516	643	...		0.082426	0.460342	0.163297		
119	1603	735	...		0.122449	0.269388	0.172789		
122	1076	460	...		0.173913	0.347826	0.173913		
47	1153	474	...		0.232068	0.341772	0.175105		
23	561	236	...		0.088983	0.440678	0.177966		
129	619	353	...		0.184136	0.351275	0.178470		
137	716	318	...		0.122642	0.339623	0.185535		
123	1099	251	...		0.247012	0.254980	0.187251		
91	1149	437	...		0.132723	0.370709	0.187643		

85	1851	769	...	0.109233	0.430429	0.188557
20	632	254	...	0.122047	0.405512	0.188976
214	1379	579	...	0.250432	0.293610	0.191710
121	1073	401	...	0.112219	0.433915	0.192020
120	1378	616	...	0.103896	0.514610	0.193182
124	1526	657	...	0.187215	0.334855	0.194825
108	1106	488	...	0.157787	0.362705	0.200820

nr_obwodu	gibalala_proc	lewica_proc	berkowicz_proc	inni_proc	\
215	0.053719	0.086777	0.045455	0.041322	
104	0.079012	0.167901	0.071605	0.024691	
101	0.123077	0.115385	0.069231	0.028846	
90	0.026465	0.066163	0.043478	0.028355	
181	0.049767	0.111975	0.066874	0.065319	
119	0.297959	0.070748	0.048980	0.017687	
122	0.086957	0.113043	0.069565	0.034783	
47	0.033755	0.107595	0.056962	0.052743	
23	0.059322	0.088983	0.046610	0.097458	
129	0.019830	0.164306	0.065156	0.036827	
137	0.075472	0.132075	0.072327	0.072327	
123	0.087649	0.115538	0.079681	0.027888	
91	0.050343	0.162471	0.073227	0.022883	
85	0.050715	0.137841	0.049415	0.033810	
20	0.035433	0.086614	0.070866	0.090551	
214	0.058722	0.088083	0.051813	0.065630	
121	0.044888	0.117207	0.079800	0.019950	
120	0.050325	0.074675	0.042208	0.021104	
124	0.115677	0.103501	0.044140	0.019787	
108	0.077869	0.104508	0.071721	0.024590	

nr_obwodu	granice	lat	\
215	borkowskie bonia, cesarza, doktora uczyskie...	50.013747	
104	bociana, jabonna, krta, nad strug 9, osiedl...	50.092575	
101	jaracza, koniecznego, reja (bez 9), solskiego	50.084070	
90	podkowiskiego, radzikowskiego nieparzyste od ...	50.085868	
181	chmieleniec, szuarowa 5, 6, 7, 8	50.020481	
119	azaliowa, chabrowa, frycza, gaik, generaa pas...	50.108149	
122	kunicy kotajowskiej od 1 do 13b i od 14 do...	50.098151	
47	fabryczna nieparzyste od 1 do 3 parzyste od 2 ...	50.058646	
23	aleja mickiewicza nieparzyste od 41 do 63, gra...	50.067017	
129	akademicka, aleja 3 maja, aleja mickiewicza pa...	50.065220	
137	aleja sowackiego parzyste od 2 do 18a, lenart...	50.071669	
123	aleja 29 listopada nieparzyste od 153 i parzys...	50.094622	
91	radzikowskiego nieparzyste od 17 do 51 i parzy...	50.087406	
85	biskupa gawliny, chemoskiego od 70a, chmurna...	50.090804	
20	aleja mickiewicza nieparzyste od 1 do 23, cybu...	50.062017	

214	chodna, kociuszkowców, kowalska, krochmalnik...	50.018081
121	kunicy kotajowskiej nieparzyste 13c, 13d i...	50.096905
120	arsena, belwederczyków, bibicka, doynkowa, d...	50.065126
124	arcybiskupa feliskiego, grabczaka, ksida me...	50.100307
108	bursztynowa, grayny, koaczy, legnicka, litaw...	50.092303
	lon	
nr_obwodu		
215	19.911173	
104	19.956144	
101	19.944981	
90	19.895309	
181	19.898014	
119	19.897588	
122	19.954291	
47	19.970494	
23	19.927601	
129	19.916718	
137	19.928580	
123	19.961867	
91	19.893937	
85	19.906077	
20	19.927276	
214	19.926870	
121	19.958302	
120	19.940302	
124	19.967555	
108	19.946193	

[20 rows x 21 columns]

## wybory prezydenckie 2014

In [6]: #majchrowski  
df\_res\_pres2014.sort\_values("majchrowski\_proc").tail(20)

Out[6]:

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
265	2014	251	41	128	56	21	14	17	
82	2014	384	69	162	80	55	30	27	
304	2014	236	43	117	63	11	10	13	
60	2014	264	64	105	63	15	18	22	
447	2014	220	35	112	37	11	27	17	
339	2014	234	21	111	78	18	12	12	
62	2014	292	50	155	51	20	23	15	
285	2014	175	33	79	25	16	19	15	
116	2014	195	23	91	47	12	17	18	
305	2014	380	49	196	72	33	28	22	

246	2014	191	25	88	51	15	9	12
284	2014	237	31	113	47	16	18	20
55	2014	279	40	116	56	30	22	20
276	2014	311	41	145	59	33	19	18
69	2014	176	19	64	41	12	15	26
117	2014	357	57	180	51	23	18	20
47	2014	251	30	76	59	35	20	16
79	2014	180	29	75	28	17	7	6
313	2014	224	29	87	26	18	22	13
335	2014	260	33	84	43	18	10	12
nr_obwodu								
265		max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
265		1390	528	...	0.475379	0.077652	0.242424	
82		1843	807	...	0.475836	0.085502	0.200743	
304		1367	493	...	0.478702	0.087221	0.237323	
60		1103	551	...	0.479129	0.116152	0.190563	
447		1158	459	...	0.479303	0.076253	0.244009	
339		1284	486	...	0.481481	0.043210	0.228395	
62		1331	606	...	0.481848	0.082508	0.255776	
285		969	362	...	0.483425	0.091160	0.218232	
116		1153	403	...	0.483871	0.057072	0.225806	
305		1866	780	...	0.487179	0.062821	0.251282	
246		903	391	...	0.488491	0.063939	0.225064	
284		1151	482	...	0.491701	0.064315	0.234440	
55		1510	563	...	0.495560	0.071048	0.206039	
276		1465	626	...	0.496805	0.065495	0.231629	
69		1149	353	...	0.498584	0.053824	0.181303	
117		1591	706	...	0.505666	0.080737	0.254958	
47		1153	487	...	0.515400	0.061602	0.156057	
79		853	342	...	0.526316	0.084795	0.219298	
313		955	419	...	0.534606	0.069212	0.207637	
335		1260	460	...	0.565217	0.071739	0.182609	
nr_obwodu								
265		gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\		
265		0.106061	0.039773	0.026515	0.032197			
82		0.099133	0.068154	0.037175	0.033457			
304		0.127789	0.022312	0.020284	0.026369			
60		0.114338	0.027223	0.032668	0.039927			
447		0.080610	0.023965	0.058824	0.037037			
339		0.160494	0.037037	0.024691	0.024691			
62		0.084158	0.033003	0.037954	0.024752			
285		0.069061	0.044199	0.052486	0.041436			
116		0.116625	0.029777	0.042184	0.044665			
305		0.092308	0.042308	0.035897	0.028205			
246		0.130435	0.038363	0.023018	0.030691			
284		0.097510	0.033195	0.037344	0.041494			

55	0.099467	0.053286	0.039076	0.035524
276	0.094249	0.052716	0.030351	0.028754
69	0.116147	0.033994	0.042493	0.073654
117	0.072238	0.032578	0.025496	0.028329
47	0.121150	0.071869	0.041068	0.032854
79	0.081871	0.049708	0.020468	0.017544
313	0.062053	0.042959	0.052506	0.031026
335	0.093478	0.039130	0.021739	0.026087

nr_obwodu	granice	lat \
265	goaka nieparzyste od 1 do 41	50.014749
82	kantora, meissnera 32, liczna	50.072041
304	okólna 2, 4, 5, 6, 8, 10, 12, 14, 16, 18, spó...	50.016414
60	majora	50.088427
447	osiedle spółdzielcze	50.077736
339	osiedle 2 puku lotniczego od 45	50.075524
62	dobrego pasterza parzyste od 102 do 110, 112, ...	50.088293
285	jerzmanowskiego parzyste od 18 do 26, teligi p...	50.015173
116	krowoderskich zuchów 3, 3a, 5, 7, 9, wybickiego 2	50.085498
305	na kozówce 2, 4, 4a, 7, 8, 9, nowosdecka 1, ...	50.020602
246	abrahama nieparzyste, andricia, bawatkowa, bu...	50.033454
284	jerzmanowskiego parzyste od 2 do 16, lilli wen...	50.010297
55	aleja 29 listopada 70, celarowska parzyste, cz...	50.085731
276	opty, telimeny 20, 30a, 32 i nieparzyste od 5 ...	50.020108
69	akacjowa 10, 12, cielewskiego nieparzyste	50.085035
117	rusznikarska nieparzyste od 1 do 11, wadysaw...	50.084391
47	fabryczna nieparzyste od 1 do 3 parzyste od 2 ...	50.058646
79	ugorek parzyste od 6 do 20	50.077031
313	batki, goszczyskiego, iowa, kacza, kolejowa ...	50.036244
335	aleja jana pawa ii parzyste od 128 do 176, bi...	50.074157

nr_obwodu	lon
265	19.950994
82	19.974833
304	19.983778
60	19.965380
447	20.028793
339	20.007061
62	19.968932
285	20.011414
116	19.930038
305	19.978838
246	19.967740
284	20.008570
55	19.953892
276	20.009630

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69          19.979896
117         19.926292
47          19.970494
79          19.981480
313         19.985703
335         20.007550

```

[20 rows x 21 columns]

In [11]: df\_res\_pres2014.sort\_values("majchrowski\_proc").head(20)

	year	majchrowski	po	pis	gibalala	lesniak	berkowicz	inni	\
nr_obwodu									
226	2014	34	17	58	25	6	6	20	
194	2014	112	45	223	77	18	31	22	
224	2014	64	25	85	60	15	16	15	
166	2014	105	44	164	59	32	15	28	
451	2014	78	41	133	46	12	14	8	
30	2014	121	46	199	52	30	12	27	
195	2014	107	36	131	61	16	21	36	
10	2014	101	26	170	27	12	4	31	
12	2014	97	27	122	51	16	15	25	
448	2014	197	53	295	79	12	28	45	
29	2014	77	29	101	32	11	14	12	
119	2014	210	93	202	139	28	28	52	
181	2014	189	115	98	103	64	40	46	
225	2014	113	46	107	58	27	20	17	
21	2014	126	21	186	25	24	20	25	
418	2014	151	25	192	75	21	28	19	
429	2014	84	21	96	41	10	19	12	
322	2014	70	14	70	35	14	20	12	
395	2014	114	23	159	44	11	16	11	
234	2014	149	77	94	65	39	24	41	
nr_obwodu		max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\	
226		629	166	...	0.204819	0.102410	0.349398		
194		1223	528	...	0.212121	0.085227	0.422348		
224		712	280	...	0.228571	0.089286	0.303571		
166		1233	447	...	0.234899	0.098434	0.366890		
451		1005	332	...	0.234940	0.123494	0.400602		
30		1047	487	...	0.248460	0.094456	0.408624		
195		1022	408	...	0.262255	0.088235	0.321078		
10		733	371	...	0.272237	0.070081	0.458221		
12		770	353	...	0.274788	0.076487	0.345609		
448		1613	709	...	0.277856	0.074753	0.416079		
29		613	276	...	0.278986	0.105072	0.365942		
119		1603	752	...	0.279255	0.123670	0.268617		

181	1516	655	...	0.288550	0.175573	0.149618
225	815	388	...	0.291237	0.118557	0.275773
21	1033	427	...	0.295082	0.049180	0.435597
418	1434	511	...	0.295499	0.048924	0.375734
429	706	283	...	0.296820	0.074205	0.339223
322	496	235	...	0.297872	0.059574	0.297872
395	1042	378	...	0.301587	0.060847	0.420635
234	1085	489	...	0.304703	0.157464	0.192229

nr_obwodu	gibal_proc	lesniak_proc	berkowicz_proc	inni_proc	\
226	0.150602	0.036145	0.036145	0.120482	
194	0.145833	0.034091	0.058712	0.041667	
224	0.214286	0.053571	0.057143	0.053571	
166	0.131991	0.071588	0.033557	0.062640	
451	0.138554	0.036145	0.042169	0.024096	
30	0.106776	0.061602	0.024641	0.055441	
195	0.149510	0.039216	0.051471	0.088235	
10	0.072776	0.032345	0.010782	0.083558	
12	0.144476	0.045326	0.042493	0.070822	
448	0.111425	0.016925	0.039492	0.063470	
29	0.115942	0.039855	0.050725	0.043478	
119	0.184840	0.037234	0.037234	0.069149	
181	0.157252	0.097710	0.061069	0.070229	
225	0.149485	0.069588	0.051546	0.043814	
21	0.058548	0.056206	0.046838	0.058548	
418	0.146771	0.041096	0.054795	0.037182	
429	0.144876	0.035336	0.067138	0.042403	
322	0.148936	0.059574	0.085106	0.051064	
395	0.116402	0.029101	0.042328	0.029101	
234	0.132924	0.079755	0.049080	0.083845	

nr_obwodu	granice	lat	\
226	goba, lei, matematyków krakowskich nieparzys...	49.975544	
194	benedyktyska, bogucianka od 1 do 41, bolesaw...	50.017279	
224	berdyczowska, chanieckiej, drubackiej, geolog...	49.982090	
166	amazonek, gogowiec, insurekcji kociuszkowski...	50.064313	
451	bartnicza, betonowa, biwakowa, brzeska, droys...	50.056126	
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068897	
195	bagienna, bogucianka od 42, bór, danusi jurand...	50.008224	
10	dominikaska, franciszaska 2 i 4, grodzka ni...	50.059053	
12	bogusawskiego parzyste od 2 do 10, dietla par...	50.056625	
448	bardosa, graniczna, grby, hutnika, jagienki, ...	50.067745	
29	duga nieparzyste od 31 do 55 i parzyste od 40...	50.069596	
119	azaliowa, chabrowa, frycza, gaik, generaa pas...	50.108149	
181	chmieleniec, szuarowa 5, 6, 7, 8	50.020481	
225	bezy, do luboni od 61, droga rokadowa, gdowsk...	49.988245	

21	czapskich, garncarska parzyste od 2 do 26, jab...	50.060594
418	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621
429	osiedle szklane domy	50.075180
322	aleja dembowskiego, aleja powstaców lskich,...	50.041373
395	osiedle przy arce od 9 do 12 i 14	50.083540
234	korpala parzyste od 22, mieczykowa, profesora ...	49.998974
	lon	
nr_obwodu		
226	19.963568	
194	19.806635	
224	19.996654	
166	19.805601	
451	20.186218	
30	19.938534	
195	19.838952	
10	19.939726	
12	19.942557	
448	20.063862	
29	19.937954	
119	19.897588	
181	19.898014	
225	19.973878	
21	19.930080	
418	20.159313	
429	20.042744	
322	19.955957	
395	20.027839	
234	19.904118	

[20 rows x 21 columns]

In [13]: #pis  
df\_res\_pres2014.sort\_values("pis\_proc").tail(20)

Out[13]:

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
391	2014	205	28	184	40	11	13	20	
376	2014	156	32	160	41	18	13	15	
227	2014	176	44	203	69	15	20	21	
404	2014	174	44	194	61	9	19	19	
7	2014	200	53	219	43	24	29	19	
418	2014	151	25	192	75	21	28	19	
316	2014	127	20	130	34	6	24	3	
386	2014	118	25	131	28	5	20	16	
405	2014	162	29	177	43	11	22	15	
381	2014	124	23	145	28	14	17	22	
408	2014	85	21	108	38	8	5	11	

414	2014	208	46	254	81	11	24	23
451	2014	78	41	133	46	12	14	8
30	2014	121	46	199	52	30	12	27
448	2014	197	53	295	79	12	28	45
380	2014	107	32	139	27	7	14	8
395	2014	114	23	159	44	11	16	11
194	2014	112	45	223	77	18	31	22
21	2014	126	21	186	25	24	20	25
10	2014	101	26	170	27	12	4	31

nr_obwodu	max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
391	1334	501	...	0.409182	0.055888	0.367265	
376	1164	435	...	0.358621	0.073563	0.367816	
227	1319	548	...	0.321168	0.080292	0.370438	
404	1802	520	...	0.334615	0.084615	0.373077	
7	1403	587	...	0.340716	0.090290	0.373083	
418	1434	511	...	0.295499	0.048924	0.375734	
316	1110	344	...	0.369186	0.058140	0.377907	
386	1134	343	...	0.344023	0.072886	0.381924	
405	1414	459	...	0.352941	0.063181	0.385621	
381	1230	373	...	0.332440	0.061662	0.388740	
408	892	276	...	0.307971	0.076087	0.391304	
414	1519	647	...	0.321484	0.071097	0.392581	
451	1005	332	...	0.234940	0.123494	0.400602	
30	1047	487	...	0.248460	0.094456	0.408624	
448	1613	709	...	0.277856	0.074753	0.416079	
380	1011	334	...	0.320359	0.095808	0.416168	
395	1042	378	...	0.301587	0.060847	0.420635	
194	1223	528	...	0.212121	0.085227	0.422348	
21	1033	427	...	0.295082	0.049180	0.435597	
10	733	371	...	0.272237	0.070081	0.458221	

nr_obwodu	gibal_a_proc	lesniak_proc	berkowicz_proc	inni_proc	\
391	0.079840	0.021956	0.025948	0.039920	
376	0.094253	0.041379	0.029885	0.034483	
227	0.125912	0.027372	0.036496	0.038321	
404	0.117308	0.017308	0.036538	0.036538	
7	0.073254	0.040886	0.049404	0.032368	
418	0.146771	0.041096	0.054795	0.037182	
316	0.098837	0.017442	0.069767	0.008721	
386	0.081633	0.014577	0.058309	0.046647	
405	0.093682	0.023965	0.047930	0.032680	
381	0.075067	0.037534	0.045576	0.058981	
408	0.137681	0.028986	0.018116	0.039855	
414	0.125193	0.017002	0.037094	0.035549	
451	0.138554	0.036145	0.042169	0.024096	

30	0.106776	0.061602	0.024641	0.055441
448	0.111425	0.016925	0.039492	0.063470
380	0.080838	0.020958	0.041916	0.023952
395	0.116402	0.029101	0.042328	0.029101
194	0.145833	0.034091	0.058712	0.041667
21	0.058548	0.056206	0.046838	0.058548
10	0.072776	0.032345	0.010782	0.083558

nr_obwodu	granice	lat \
391	osiedle albertyskie od 12 do 21	50.081621
376	dziekanowicka, osiedle piastów od 54, powstac...	50.106289
227	bogdanowskiego, chaubiskiego nieparzyste od ...	49.981876
404	osiedle kazimierzowskie od 1 do 15, spytko z m...	50.083241
7	augustiaska nieparzyste od 7 do 21 i parzyste...	50.049284
418	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621
316	bartników, pukownika barty, bugaj, czeczotta,...	50.038104
386	osiedle kalinowe od 1 do 11	50.091066
405	elbiety okietkówny, osiedle kazimierzowskie ...	50.085395
381	króla, osiedle na lotnisku 3 i od 7 do 18a	50.087084
408	osiedle na wzgórzach od 11 do 13 a, od 28 do 35	50.095532
414	birkuta, boywoja, bukszpanowa, cieliskiej-b...	50.107421
451	bartnicza, betonowa, biwakowa, brzeska, droys...	50.056126
30	duga 27, 29 i nieparzyste od 57 do 65, helcló...	50.068897
448	bardosa, graniczna, grby, hutnika, jagienki, ...	50.067745
380	osiedle na lotnisku 1, 2, 4, 6, od 19 do 27	50.087294
395	osiedle przy arce od 9 do 12 i 14	50.083540
194	benedyktyksa, bogucianka od 1 do 41, bolesaw...	50.017279
21	czapskich, garncarska parzyste od 2 do 26, jab...	50.060594
10	dominińska, franciszkańska 2 i 4, grodzka ni...	50.059053

nr_obwodu	lon
391	20.017818
376	19.994910
227	19.953550
404	20.023827
7	19.940905
418	20.159313
316	20.052474
386	20.016400
405	20.021852
381	20.015378
408	20.060730
414	20.080681
451	20.186218
30	19.938534
448	20.063862

380	20.016875
395	20.027839
194	19.806635
21	19.930080
10	19.939726

[20 rows x 21 columns]

In [6]: df\_res\_pres2014.sort\_values("pis\_proc").head(20)

Out[6]:

nr_obwodu	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
104	2014	181	44	47	66	37	18	19	
215	2014	100	46	30	27	17	10	23	
137	2014	109	41	45	63	32	19	24	
181	2014	189	115	98	103	64	40	46	
47	2014	251	30	76	59	35	20	16	
123	2014	106	19	43	61	14	14	7	
101	2014	201	68	88	70	45	31	30	
138	2014	146	38	56	31	25	16	24	
23	2014	113	25	43	29	16	8	19	
20	2014	107	36	46	29	14	18	19	
91	2014	180	41	78	60	49	35	10	
90	2014	211	83	92	58	30	22	30	
214	2014	241	73	110	100	42	20	35	
182	2014	193	75	105	105	51	23	39	
124	2014	277	70	122	129	37	22	28	
308	2014	244	33	98	59	39	38	31	
69	2014	176	19	64	41	12	15	26	
122	2014	198	45	86	57	41	21	26	
335	2014	260	33	84	43	18	10	12	
142	2014	259	49	106	68	52	22	17	
nr_obwodu	max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\	
104	954	412	...		0.439320	0.106796	0.114078		
215	538	253	...		0.395257	0.181818	0.118577		
137	716	333	...		0.327327	0.123123	0.135135		
181	1516	655	...		0.288550	0.175573	0.149618		
47	1153	487	...		0.515400	0.061602	0.156057		
123	1099	264	...		0.401515	0.071970	0.162879		
101	1107	533	...		0.377111	0.127580	0.165103		
138	759	336	...		0.434524	0.113095	0.166667		
23	561	253	...		0.446640	0.098814	0.169960		
20	632	269	...		0.397770	0.133829	0.171004		
91	1149	453	...		0.397351	0.090508	0.172185		
90	1122	526	...		0.401141	0.157795	0.174905		
214	1379	621	...		0.388084	0.117552	0.177134		

182	1299	591	...	0.326565	0.126904	0.177665
124	1526	685	...	0.404380	0.102190	0.178102
308	1321	542	...	0.450185	0.060886	0.180812
69	1149	353	...	0.498584	0.053824	0.181303
122	1076	474	...	0.417722	0.094937	0.181435
335	1260	460	...	0.565217	0.071739	0.182609
142	1353	573	...	0.452007	0.085515	0.184991

nr_obwodu	gibalal_proc	lesniak_proc	berkowicz_proc	inni_proc	\
104	0.160194	0.089806	0.043689	0.046117	
215	0.106719	0.067194	0.039526	0.090909	
137	0.189189	0.096096	0.057057	0.072072	
181	0.157252	0.097710	0.061069	0.070229	
47	0.121150	0.071869	0.041068	0.032854	
123	0.231061	0.053030	0.053030	0.026515	
101	0.131332	0.084428	0.058161	0.056285	
138	0.092262	0.074405	0.047619	0.071429	
23	0.114625	0.063241	0.031621	0.075099	
20	0.107807	0.052045	0.066914	0.070632	
91	0.132450	0.108168	0.077263	0.022075	
90	0.110266	0.057034	0.041825	0.057034	
214	0.161031	0.067633	0.032206	0.056361	
182	0.177665	0.086294	0.038917	0.065990	
124	0.188321	0.054015	0.032117	0.040876	
308	0.108856	0.071956	0.070111	0.057196	
69	0.116147	0.033994	0.042493	0.073654	
122	0.120253	0.086498	0.044304	0.054852	
335	0.093478	0.039130	0.021739	0.026087	
142	0.118674	0.090750	0.038394	0.029668	

nr_obwodu	granice	lat	\
104	bociana, jabonna, krta, nad strug 9, osiedl...	50.092575	
215	borkowskie bonia, cesarza, doktora uczyskie...	50.013747	
137	aleja sowackiego parzyste od 2 do 18a, lenart...	50.071669	
181	chmieleniec, szuarowa 5, 6, 7, 8	50.020481	
47	fabryczna nieparzyste od 1 do 3 parzyste od 2 ...	50.058646	
123	aleja 29 listopada nieparzyste od 153 i parzys...	50.094622	
101	jaracza, konecznego, reja (bez 9), solskiego	50.084070	
138	chopina nieparzyste od 17 do 33 i parzyste od ...	50.068501	
23	aleja mickiewicza nieparzyste od 41 do 63, gra...	50.067017	
20	aleja mickiewicza nieparzyste od 1 do 23, cybu...	50.062017	
91	radzikowskiego nieparzyste od 17 do 51 i parzy...	50.087406	
90	podkowiskiego, radzikowskiego nieparzyste od ...	50.085868	
214	chodna, kociuszkowców, kowalska, krochmalnik...	50.018081	
182	czerwone maki, lubostro, szwai	50.014662	
124	arcybiskupa feliskiego, grabczaka, ksidza me...	50.100307	

308	gromadzka, krzywda od 28, paproci, paszowska ...	50.040484
69	akacjowa 10, 12, cielewskiego nieparzyste	50.085035
122	kunicy kotajowskiej od 1 do 13b i od 14 do...	50.098151
335	aleja jana pawa ii parzyste od 128 do 176, bi...	50.074157
142	obona, poznaska, racawicka 55, skadowa od ...	50.077993
	lon	
nr_obwodu		
104	19.956144	
215	19.911173	
137	19.928580	
181	19.898014	
47	19.970494	
123	19.961867	
101	19.944981	
138	19.920547	
23	19.927601	
20	19.927276	
91	19.893937	
90	19.895309	
214	19.926870	
182	19.888915	
124	19.967555	
308	19.977988	
69	19.979896	
122	19.954291	
335	20.007550	
142	19.927777	

[20 rows x 21 columns]

In [14]: #gibal  
df\_res\_pres2014.sort\_values("gibal\_proc").tail(20)

Out[14]:

nr_obwodu	year	majchrowski	po	pis	gibalala	lesniak	berkowicz	inni	\
339	2014	234	21	111	78	18	12	12	
214	2014	241	73	110	100	42	20	35	
108	2014	206	56	96	82	25	24	16	
217	2014	93	41	66	48	11	14	22	
355	2014	269	91	167	123	27	38	32	
438	2014	116	18	111	60	17	24	17	
311	2014	194	54	103	85	38	22	18	
426	2014	132	25	111	62	13	20	9	
435	2014	210	36	136	93	28	26	22	
255	2014	142	43	89	66	19	16	12	
400	2014	113	39	80	63	31	21	17	
182	2014	193	75	105	105	51	23	39	

270	2014	164	59	105	84	24	25	11
346	2014	197	45	119	91	25	12	19
119	2014	210	93	202	139	28	28	52
38	2014	215	35	108	97	21	23	24
124	2014	277	70	122	129	37	22	28
137	2014	109	41	45	63	32	19	24
224	2014	64	25	85	60	15	16	15
123	2014	106	19	43	61	14	14	7
nr_obwodu								
339	1284	486	...	...	0.481481	0.043210	0.228395	
214	1379	621	...	...	0.388084	0.117552	0.177134	
108	1106	505	...	...	0.407921	0.110891	0.190099	
217	709	295	...	...	0.315254	0.138983	0.223729	
355	1607	747	...	...	0.360107	0.121821	0.223561	
438	935	363	...	...	0.319559	0.049587	0.305785	
311	1164	514	...	...	0.377432	0.105058	0.200389	
426	1083	372	...	...	0.354839	0.067204	0.298387	
435	1494	551	...	...	0.381125	0.065336	0.246824	
255	1090	387	...	...	0.366925	0.111111	0.229974	
400	1009	364	...	...	0.310440	0.107143	0.219780	
182	1299	591	...	...	0.326565	0.126904	0.177665	
270	1452	472	...	...	0.347458	0.125000	0.222458	
346	1174	508	...	...	0.387795	0.088583	0.234252	
119	1603	752	...	...	0.279255	0.123670	0.268617	
38	1058	523	...	...	0.411090	0.066922	0.206501	
124	1526	685	...	...	0.404380	0.102190	0.178102	
137	716	333	...	...	0.327327	0.123123	0.135135	
224	712	280	...	...	0.228571	0.089286	0.303571	
123	1099	264	...	...	0.401515	0.071970	0.162879	
nr_obwodu								
339	0.160494	0.037037	...	...	0.024691	0.024691	0.024691	
214	0.161031	0.067633	...	...	0.032206	0.056361	0.056361	
108	0.162376	0.049505	...	...	0.047525	0.031683	0.031683	
217	0.162712	0.037288	...	...	0.047458	0.074576	0.074576	
355	0.164659	0.036145	...	...	0.050870	0.042838	0.042838	
438	0.165289	0.046832	...	...	0.066116	0.046832	0.046832	
311	0.165370	0.073930	...	...	0.042802	0.035019	0.035019	
426	0.166667	0.034946	...	...	0.053763	0.024194	0.024194	
435	0.168784	0.050817	...	...	0.047187	0.039927	0.039927	
255	0.170543	0.049096	...	...	0.041344	0.031008	0.031008	
400	0.173077	0.085165	...	...	0.057692	0.046703	0.046703	
182	0.177665	0.086294	...	...	0.038917	0.065990	0.065990	
270	0.177966	0.050847	...	...	0.052966	0.023305	0.023305	
346	0.179134	0.049213	...	...	0.023622	0.037402	0.037402	

119	0.184840	0.037234	0.037234	0.069149
38	0.185468	0.040153	0.043977	0.045889
124	0.188321	0.054015	0.032117	0.040876
137	0.189189	0.096096	0.057057	0.072072
224	0.214286	0.053571	0.057143	0.053571
123	0.231061	0.053030	0.053030	0.026515

nr_obwodu	granice	lat \
339	osiedle 2 puku lotniczego od 45	50.075524
214	chodna, kociuszkowców, kowalska, krochmalnik...	50.018081
108	bursztynowa, grayny, koaczy, legnicka, litaw...	50.092303
217	herbertha 8, 10, 12, 14, jeleniogórska, jugowic...	50.009680
355	osiedle owiecenia 40, 42, 43 i od 46	50.094321
438	ludmierska, osiedle teatralne od 8 do 24, od ...	50.077439
311	ksidza stoszki, przewóz nieparzyste od 1 do 5...	50.041845
426	osiedle willowe od 1 do 37, plac przy poczcie	50.072177
435	osiedle centrum c	50.074858
255	bujaka (bez 14, 14a, 15, 16, 16a), owienicka,...	50.009632
400	generaa okulickiego nieparzyste od 49 do 59, ...	50.094011
182	czerwone maki, lubostro, szwai	50.014662
270	henryka i karola czeczów, malachitowa, opalowa...	50.080386
346	osiedle dywizjonu 303 od 11 do 17, 66a	50.083732
119	azaliowa, chabrowa, frycza, gaik, generaa pas...	50.108149
38	bolesawa chrobrego od 1 do 23, domki, grochow...	50.077185
124	arcybiskupa feliskiego, grabczaka, ksidza me...	50.100307
137	aleja sowackiego parzyste od 2 do 18a, lenart...	50.071669
224	berdyczowska, chanieckiej, drubackiej, geolog...	49.982090
123	aleja 29 listopada nieparzyste od 153 i parzys...	50.094622

nr_obwodu	lon
339	20.007061
214	19.926870
108	19.946193
217	19.943893
355	19.994495
438	20.032468
311	19.985478
426	20.046869
435	20.035936
255	19.948395
400	20.022992
182	19.888915
270	19.967357
346	20.003297
119	19.897588
38	19.964702

```

124      19.967555
137      19.928580
224      19.996654
123      19.961867

```

[20 rows x 21 columns]

In [20]: df\_res\_pres2014.sort\_values("gibalaproc").head(20)

	year	majchrowski	po	pis	gibalaproc	lesniak	berkowicz	inni	\
nr_obwodu									
8	2014	159	31	153	22	27	21	33	
169	2014	177	51	87	24	44	29	33	
21	2014	126	21	186	25	24	20	25	
313	2014	224	29	87	26	18	22	13	
2	2014	131	31	109	22	21	11	22	
152	2014	215	95	125	36	50	19	25	
15	2014	151	42	176	31	32	18	30	
219	2014	251	33	211	45	30	41	41	
285	2014	175	33	79	25	16	19	15	
160	2014	197	46	120	31	20	12	22	
43	2014	241	37	159	37	24	19	15	
176	2014	106	38	69	20	24	11	19	
86	2014	195	38	120	32	22	36	14	
208	2014	246	64	162	41	29	17	25	
174	2014	221	48	141	37	39	10	31	
283	2014	189	46	110	29	15	15	7	
117	2014	357	57	180	51	23	18	20	
10	2014	101	26	170	27	12	4	31	
45	2014	283	56	197	47	23	14	24	
7	2014	200	53	219	43	24	29	19	
nr_obwodu		max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\	
8		1277	446	...	0.356502	0.069507	0.343049		
169		947	445	...	0.397753	0.114607	0.195506		
21		1033	427	...	0.295082	0.049180	0.435597		
313		955	419	...	0.534606	0.069212	0.207637		
2		942	347	...	0.377522	0.089337	0.314121		
152		1017	565	...	0.380531	0.168142	0.221239		
15		976	480	...	0.314583	0.087500	0.366667		
219		1224	652	...	0.384969	0.050613	0.323620		
285		969	362	...	0.483425	0.091160	0.218232		
160		1015	448	...	0.439732	0.102679	0.267857		
43		1176	532	...	0.453008	0.069549	0.298872		
176		588	287	...	0.369338	0.132404	0.240418		
86		1117	457	...	0.426696	0.083151	0.262582		
208		1359	584	...	0.421233	0.109589	0.277397		

174	1048	527	...	0.419355	0.091082	0.267552
283	966	411	...	0.459854	0.111922	0.267640
117	1591	706	...	0.505666	0.080737	0.254958
10	733	371	...	0.272237	0.070081	0.458221
45	1456	644	...	0.439441	0.086957	0.305901
7	1403	587	...	0.340716	0.090290	0.373083

nr_obwodu	gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\
8	0.049327	0.060538	0.047085	0.073991	
169	0.053933	0.098876	0.065169	0.074157	
21	0.058548	0.056206	0.046838	0.058548	
313	0.062053	0.042959	0.052506	0.031026	
2	0.063401	0.060519	0.031700	0.063401	
152	0.063717	0.088496	0.033628	0.044248	
15	0.064583	0.066667	0.037500	0.062500	
219	0.069018	0.046012	0.062883	0.062883	
285	0.069061	0.044199	0.052486	0.041436	
160	0.069196	0.044643	0.026786	0.049107	
43	0.069549	0.045113	0.035714	0.028195	
176	0.069686	0.083624	0.038328	0.066202	
86	0.070022	0.048140	0.078775	0.030635	
208	0.070205	0.049658	0.029110	0.042808	
174	0.070209	0.074004	0.018975	0.058824	
283	0.070560	0.036496	0.036496	0.017032	
117	0.072238	0.032578	0.025496	0.028329	
10	0.072776	0.032345	0.010782	0.083558	
45	0.072981	0.035714	0.021739	0.037267	
7	0.073254	0.040886	0.049404	0.032368	

nr_obwodu	granice	lat	\
8	augustiaska od 1 do 6, dietla nieparzyste od ...	50.050684	
169	faata 2, 2a, 2b, filarecka, kraszewskiego nie...	50.057099	
21	czapskich, garncarska parzyste od 2 do 26, jab...	50.060594	
313	batki, goszczyskiego, iowa, kacza, kolejowa ...	50.036244	
2	bocheska, bonifraterska, gazowa, krakowska pa...	50.048564	
152	armii krajowej nieparzyste 89, 93, 97, bronowi...	50.079530	
15	floriaska, may rynek, mikajska, na gródku,...	50.063437	
219	chochoowska, do sanktuarium boego miosierdz...	50.019336	
285	jerzmanowskiego parzyste od 18 do 26, teligi p...	50.015173	
160	bronowicka nieparzyste od 71 do 139, czepca pa...	50.080052	
43	pókole, widok nieparzyste od 5 do 41 i parzys...	50.060543	
176	aleja waszyngtona, anczyca, benedyktowicza, bi...	50.057553	
86	berwiskiego, mehoffera nieparzyste od 3 do 11...	50.087301	
208	barska nieparzyste od 47 i parzyste od 44, kom...	50.046144	
174	aleja marszaka focha 34, 38b, nieparzyste od ...	50.014302	
283	lilli wenedy (bez 1)	50.019401	

```

117      rusznikarska nieparzyste od 1 do 11, wadysaw... 50.084391
10       dominikaska, franciszka 2 i 4, grodzka ni... 50.059053
45       aleja pokoju parzyste od 10 do 12, pukownika ... 50.060279
7        augustiaska nieparzyste od 7 do 21 i parzyste... 50.049284

          lon
nr_obwodu
8        19.940846
169      19.918818
21       19.930080
313      19.985703
2         19.945073
152      19.888495
15       19.940282
219      19.944125
285      20.011414
160      19.895773
43       19.981709
176      19.874972
86       19.916133
208      19.932364
174      19.999361
283      20.004334
117      19.926292
10       19.939726
45       19.965083
7        19.940905

```

[20 rows x 21 columns]

In [34]: #po  
df\_res\_pres2014.sort\_values("po\_proc").tail(20)

Out[34]:

	year	majchrowski	po	pis	gibal	lesniak	berkowicz	inni	\
nr_obwodu									
165	2014	315	125	214	103	41	53	54	
217	2014	93	41	66	48	11	14	22	
121	2014	132	57	85	65	32	21	18	
259	2014	183	72	110	57	27	27	29	
163	2014	248	92	152	60	33	22	37	
161	2014	153	67	135	40	39	15	19	
133	2014	159	61	101	36	35	16	18	
180	2014	122	55	78	50	44	13	21	
110	2014	165	76	157	55	26	29	18	
22	2014	129	48	60	34	22	8	22	
159	2014	180	82	125	54	46	26	21	
162	2014	138	55	83	40	21	11	6	
234	2014	149	77	94	65	39	24	41	

90	2014	211	83	92	58	30	22	30
96	2014	108	43	68	21	16	8	8
84	2014	253	116	187	70	39	32	30
85	2014	275	129	147	96	58	29	48
152	2014	215	95	125	36	50	19	25
181	2014	189	115	98	103	64	40	46
215	2014	100	46	30	27	17	10	23
nr_obwodu								
165		max_voters	votes	...	majchrowski_proc	po_proc	pis_proc	\
165		1771	905	...	0.348066	0.138122	0.236464	
217		709	295	...	0.315254	0.138983	0.223729	
121		1073	410	...	0.321951	0.139024	0.207317	
259		1113	505	...	0.362376	0.142574	0.217822	
163		1426	644	...	0.385093	0.142857	0.236025	
161		852	468	...	0.326923	0.143162	0.288462	
133		780	426	...	0.373239	0.143192	0.237089	
180		950	383	...	0.318538	0.143603	0.203655	
110		1113	526	...	0.313688	0.144487	0.298479	
22		758	323	...	0.399381	0.148607	0.185759	
159		1078	534	...	0.337079	0.153558	0.234082	
162		715	354	...	0.389831	0.155367	0.234463	
234		1085	489	...	0.304703	0.157464	0.192229	
90		1122	526	...	0.401141	0.157795	0.174905	
96		792	272	...	0.397059	0.158088	0.250000	
84		1749	727	...	0.348006	0.159560	0.257221	
85		1851	782	...	0.351662	0.164962	0.187980	
152		1017	565	...	0.380531	0.168142	0.221239	
181		1516	655	...	0.288550	0.175573	0.149618	
215		538	253	...	0.395257	0.181818	0.118577	
nr_obwodu								
165		gibalala_proc	lesniak_proc	berkowicz_proc	inni_proc	\		
165		0.113812	0.045304	0.058564	0.059669			
217		0.162712	0.037288	0.047458	0.074576			
121		0.158537	0.078049	0.051220	0.043902			
259		0.112871	0.053465	0.053465	0.057426			
163		0.093168	0.051242	0.034161	0.057453			
161		0.085470	0.083333	0.032051	0.040598			
133		0.084507	0.082160	0.037559	0.042254			
180		0.130548	0.114883	0.033943	0.054830			
110		0.104563	0.049430	0.055133	0.034221			
22		0.105263	0.068111	0.024768	0.068111			
159		0.101124	0.086142	0.048689	0.039326			
162		0.112994	0.059322	0.031073	0.016949			
234		0.132924	0.079755	0.049080	0.083845			
90		0.110266	0.057034	0.041825	0.057034			
96		0.077206	0.058824	0.029412	0.029412			

84	0.096286	0.053645	0.044017	0.041265		
85	0.122762	0.074169	0.037084	0.061381		
152	0.063717	0.088496	0.033628	0.044248		
181	0.157252	0.097710	0.061069	0.070229		
215	0.106719	0.067194	0.039526	0.090909		
					granice	lat \
nr_obwodu						
165	aleja kasztanowa nieparzyste od 47 do 73 i par...	50.066278				
217	herberga 8, 10, 12, 14, jeleniogórska, jugowic...	50.009680				
121	kunicy kotajowskiej nieparzyste 13c, 13d i...	50.096905				
259	turniejowa nieparzyste od 59 i parzyste od 62 ...	50.010733				
163	bandtkiego od 1 do 18a, bronowicka parzyste od...	50.078149				
161	drzymay, kunickiego, mysakowskiego (bez 13),...	50.073954				
133	czyewskiego, kazimierza wielkiego nieparzyste...	50.081241				
180	obozowa nieparzyste od 53 do 63, parzyste od 2...	50.015856				
110	glogera, jarzynowa, jasna, kosmonautów, malino...	50.102593				
22	aleja mickiewicza nieparzyste od 25 do 37, cza...	50.065331				
159	bronowicka nieparzyste od 5 do 39, czeladnicza...	50.076621				
162	armii krajowej 18, lea nieparzyste od 189 i pa...	50.079800				
234	korpala parzyste od 22, mieczykowa, profesora ...	49.998974				
90	podkowiskiego, radzikowskiego nieparzyste od ...	50.085868				
96	palacha	50.089437				
84	budrysów, dziewanny, margaretek, na polach, na...	50.100691				
85	biskupa gawliny, chemoskiego od 70a, chmurna...	50.090804				
152	armii krajowej nieparzyste 89, 93, 97, bronowi...	50.079530				
181	chmieleniec, szuarowa 5, 6, 7, 8	50.020481				
215	borkowskie bonia, cesarza, doktora uczyskie...	50.013747				
	lon					
nr_obwodu						
165	19.858829					
217	19.943893					
121	19.958302					
259	19.960294					
163	19.899087					
161	19.892708					
133	19.912884					
180	19.907830					
110	19.927550					
22	19.927495					
159	19.905142					
162	19.888834					
234	19.904118					
90	19.895309					
96	19.917954					
84	19.882797					
85	19.906077					

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152      19.888495
181      19.898014
215      19.911173

```

[20 rows x 21 columns]

In [44]: df\_res\_pres2014.sort\_values("po\_proc").head(20)

Out[44]:

	year	majchrowski	po	pis	gibalal	lesniak	berkowicz	inni	\
nr_obwodu									
452	2014	48	4	34	15	3	6	1	
394	2014	236	24	195	74	8	10	23	
339	2014	234	21	111	78	18	12	12	
66	2014	195	19	114	49	18	17	23	
349	2014	328	38	263	89	18	37	31	
418	2014	151	25	192	75	21	28	19	
347	2014	87	12	80	27	9	12	18	
21	2014	126	21	186	25	24	20	25	
438	2014	116	18	111	60	17	24	17	
219	2014	251	33	211	45	30	41	41	
222	2014	274	33	168	74	39	34	27	
358	2014	215	25	126	61	17	22	23	
318	2014	217	26	124	57	34	18	29	
432	2014	132	17	83	41	17	21	13	
312	2014	385	45	178	108	41	69	23	
350	2014	247	34	225	65	18	27	19	
69	2014	176	19	64	41	12	15	26	
407	2014	206	30	179	65	30	18	18	
450	2014	185	29	182	68	28	16	17	
391	2014	205	28	184	40	11	13	20	
nr_obwodu		max_voters	votes	...		majchrowski_proc	po_proc	pis_proc	\
452		324	111	...		0.432432	0.036036	0.306306	
394		1266	570	...		0.414035	0.042105	0.342105	
339		1284	486	...		0.481481	0.043210	0.228395	
66		1121	435	...		0.448276	0.043678	0.262069	
349		2005	804	...		0.407960	0.047264	0.327114	
418		1434	511	...		0.295499	0.048924	0.375734	
347		621	245	...		0.355102	0.048980	0.326531	
21		1033	427	...		0.295082	0.049180	0.435597	
438		935	363	...		0.319559	0.049587	0.305785	
219		1224	652	...		0.384969	0.050613	0.323620	
222		1516	649	...		0.422188	0.050847	0.258860	
358		1173	489	...		0.439673	0.051125	0.257669	
318		1139	505	...		0.429703	0.051485	0.245545	
432		980	324	...		0.407407	0.052469	0.256173	
312		1949	849	...		0.453475	0.053004	0.209658	

350	1513	635	...	0.388976	0.053543	0.354331
69	1149	353	...	0.498584	0.053824	0.181303
407	1680	546	...	0.377289	0.054945	0.327839
450	1282	525	...	0.352381	0.055238	0.346667
391	1334	501	...	0.409182	0.055888	0.367265

nr_obwodu	gibalal_proc	lesniak_proc	berkowicz_proc	inni_proc	\
452	0.135135	0.027027	0.054054	0.009009	
394	0.129825	0.014035	0.017544	0.040351	
339	0.160494	0.037037	0.024691	0.024691	
66	0.112644	0.041379	0.039080	0.052874	
349	0.110697	0.022388	0.046020	0.038557	
418	0.146771	0.041096	0.054795	0.037182	
347	0.110204	0.036735	0.048980	0.073469	
21	0.058548	0.056206	0.046838	0.058548	
438	0.165289	0.046832	0.066116	0.046832	
219	0.069018	0.046012	0.062883	0.062883	
222	0.114022	0.060092	0.052388	0.041602	
358	0.124744	0.034765	0.044990	0.047035	
318	0.112871	0.067327	0.035644	0.057426	
432	0.126543	0.052469	0.064815	0.040123	
312	0.127208	0.048292	0.081272	0.027091	
350	0.102362	0.028346	0.042520	0.029921	
69	0.116147	0.033994	0.042493	0.073654	
407	0.119048	0.054945	0.032967	0.032967	
450	0.129524	0.053333	0.030476	0.032381	
391	0.079840	0.021956	0.025948	0.039920	

nr_obwodu	granice	lat	\
452	cementowa, dymarek, gwarecka, igoomska od 1 d...	50.073431	
394	osiedle przy arce od 1 do 8, porucznika szczek...	50.081887	
339	osiedle 2 puku lotniczego od 45	50.075524	
66	powstaców parzyste od 30 do 34 a	50.093803	
349	czaplickiego, osiedle kombatantów od 1 do 15	50.088971	
418	barwna, dybowskiego, hektary, igoomska od 83 ...	50.106621	
347	aleja pokoju nieparzyste od 51 do 57, cichocie...	50.062533	
21	czapskich, garncarska parzyste od 2 do 26, jab...	50.060594	
438	ludmierska, osiedle teatralne od 8 do 24, od ...	50.077439	
219	chochoowska, do sanktuarium boego miosierdz...	50.019336	
222	borsucza nieparzyste od 5 i parzyste od 10, ce...	50.028688	
358	osiedle owiecenia od 18 do 27	50.089297	
318	generaa kutrzeby, kalwaryjska nieparzyste od ...	50.040704	
432	osiedle szkolne od 6 do 27	50.076391	
312	lipska nieparzyste, may paszów, myliwska pa...	50.040574	
350	osiedle tysiclecia od 1 do 14	50.089118	
69	akacjowa 10, 12, cielewskiego nieparzyste	50.085035	

407	osiedle na wzgórzach od 1 do 10, od 36 do 44, 59	50.092577
450	barwinkowa, ciekowiec, czeczeska, generaak...a	50.075303
391	osiedle albertyskie od 12 do 21	50.081621
	lon	
nr_obwodu		
452	20.116874	
394	20.025180	
339	20.007061	
66	19.967994	
349	20.004986	
418	20.159313	
347	19.986010	
21	19.930080	
438	20.032468	
219	19.944125	
222	19.928576	
358	19.993512	
318	19.941900	
432	20.046373	
312	19.983726	
350	20.000616	
69	19.979896	
407	20.059875	
450	20.154414	
391	20.017818	

[20 rows x 21 columns]

Wniski z tej części analizy zostają w całości ukryte.

In [ ]: