population-v2

July 30, 2021

```python
[1]: import matplotlib.pyplot as plt
     import csv
     import pandas as pd
     import numpy as np
```

```python
[2]: data: [] = list()
     home: [] = list()
     away: object = None
     result_name: str = ''
```

```python
[3]: # df = pd.read_csv('./data/202106_202106_    _ .csv', encoding='UTF-8',␣
     ↪thousands = ',', index_col = 0)
     # df.to_csv('./data/202106_202106_    _ _without_comma.csv', sep=',',␣
     ↪na_rep='NaN')
     data = csv.reader(open('./data/202106_202106_population.csv', 'rt',␣
     ↪encoding='UTF-8'))
     next(data)
     data = list(data)
```

```python
[4]: # print(data)
```

```python
[5]: arr = []
     [arr.append(int(j)) for i in data if ' ' in i[0] for j in i[3:]]
     print([i for i in arr])
```

```
[16, 8, 11, 21, 13, 28, 19, 25, 24, 19, 22, 12, 10, 19, 22, 12, 14, 11, 30, 31,
45, 85, 73, 70, 81, 70, 65, 77, 89, 86, 79, 79, 71, 66, 68, 53, 65, 53, 67, 51,
60, 46, 50, 45, 46, 40, 44, 49, 49, 62, 51, 49, 70, 69, 60, 59, 62, 50, 64, 54,
70, 80, 74, 53, 57, 72, 68, 56, 44, 41, 37, 38, 43, 40, 34, 27, 29, 30, 41, 35,
32, 28, 22, 18, 17, 14, 23, 18, 11, 6, 6, 10, 9, 11, 4, 0, 2, 6, 2, 1, 9]
```

```python
[6]: plt.style.use('ggplot')
     plt.plot(arr)
```

```
[6]: [<matplotlib.lines.Line2D at 0x7fa49ec6ab20>]
```
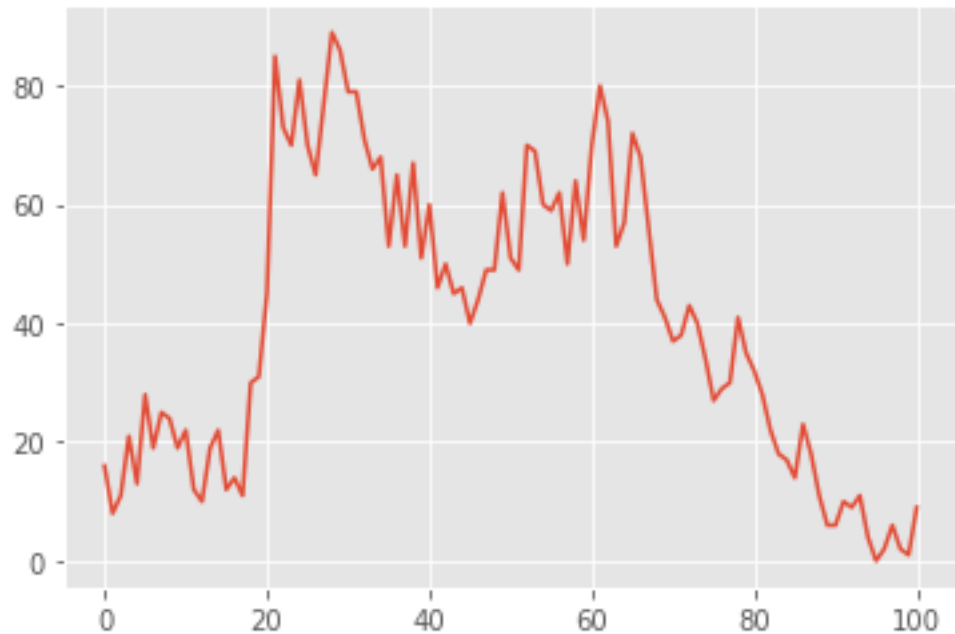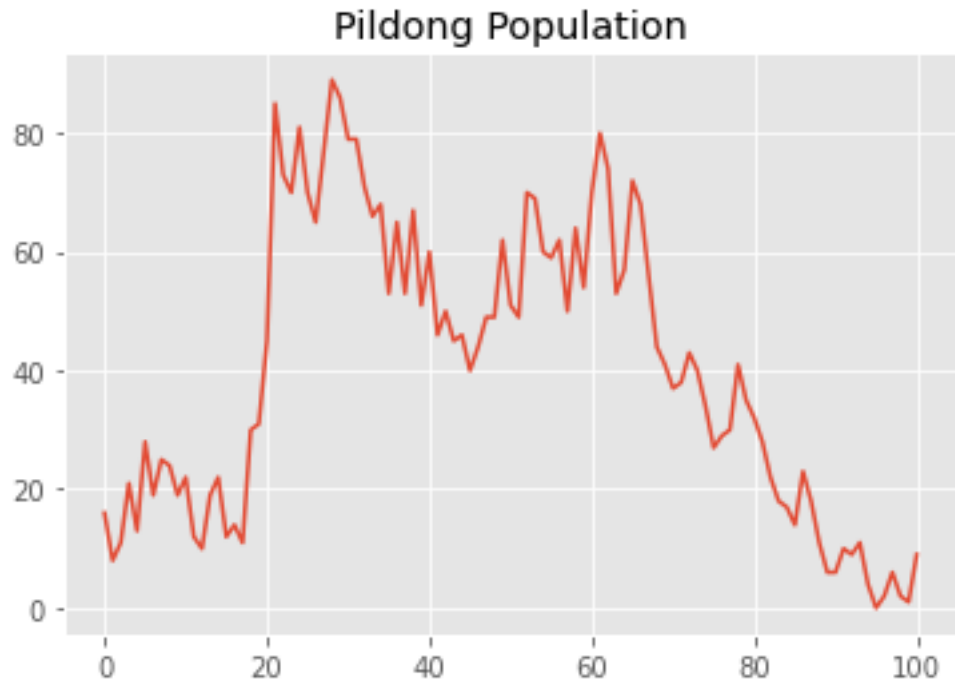
```
[7]: [home.append(int(j)) for i in data if ' ' in i[0] for j in i[3:]]
     print(home)
```

```
[16, 8, 11, 21, 13, 28, 19, 25, 24, 19, 22, 12, 10, 19, 22, 12, 14, 11, 30, 31,
45, 85, 73, 70, 81, 70, 65, 77, 89, 86, 79, 79, 71, 66, 68, 53, 65, 53, 67, 51,
60, 46, 50, 45, 46, 40, 44, 49, 49, 62, 51, 49, 70, 69, 60, 59, 62, 50, 64, 54,
70, 80, 74, 53, 57, 72, 68, 56, 44, 41, 37, 38, 43, 40, 34, 27, 29, 30, 41, 35,
32, 28, 22, 18, 17, 14, 23, 18, 11, 6, 6, 10, 9, 11, 4, 0, 2, 6, 2, 1, 9]
```

```
[8]: plt.title('Pildong Population')
     plt.plot(arr)
```
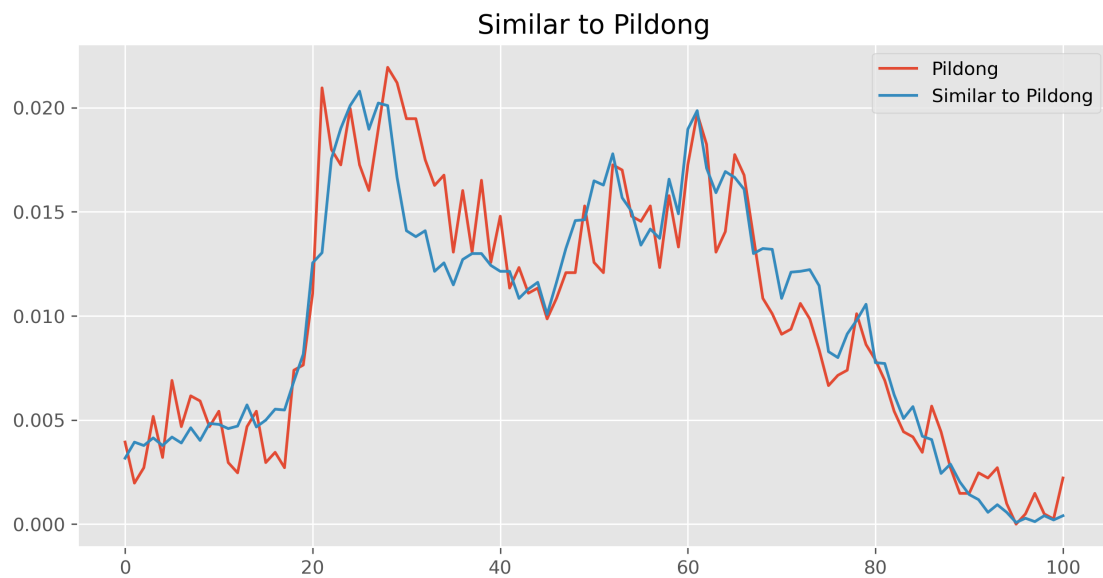
```
[8]: [<matplotlib.lines.Line2D at 0x7fa496b67fd0>]
```

Pildong Population

```
mn = 1
result = 0
home = []
result_name = ''
for i in data:
    if ' ' in i[0]:
        foo = np.array(i[3:], dtype=int)/int(i[2])


home = foo
away = None
for i in data:
    bar = np.array(i[3:], dtype=int) / int(i[2])
    s = np.sum((home - bar) ** 2)
    if s < mn and ' ' not in i[0]:
        mn = s
        result_name = i[0]
        result = bar
away = result
```

```
<ipython-input-9-e962bbc9099f>:12: RuntimeWarning: invalid value encountered in
true_divide
  bar = np.array(i[3:], dtype=int) / int(i[2])
```

```
[10]: plt.style.use('ggplot')
      plt.figure(figsize=(10, 5), dpi=300)
      plt.title('Similar to Pildong')
      plt.plot(home, label='Pildong')
      plt.plot(away, label='Similar to Pildong')
      plt.legend()
```

[10]: <matplotlib.legend.Legend at 0x7fa496b212b0>

[ ]: