AnalisisPoblacionBokeh

October 30, 2021

1 Práctica 6: Análisis de población con Bokeh

C03 : Visualización Científica y Narrativas

RAUGM 2021: Geociencias e inclusión

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

[2]:
```
from bokeh.io import output_notebook, show
from bokeh.plotting import figure
output_notebook()
```

[3]:
```
FR = pd.read_csv('../01/UNdata_Export_20211021_200853345.zip')
```

[4]:
```
FR.head()
```

[4]:

	Country or Area	Year(s)	Variant	Value
0	Afghanistan	2015-2020	Medium	4.555
1	Afghanistan	2010-2015	Medium	5.447
2	Afghanistan	2005-2010	Medium	6.478
3	Afghanistan	2000-2005	Medium	7.182
4	Afghanistan	1995-2000	Medium	7.654

[5]:
```
paises = FR.groupby('Country or Area')
```

[6]:
```
# Después se obtienen los datos de España y Suecia
spa = paises.get_group('Spain')
swe = paises.get_group('Sweden')
```

[7]:
```
spa.index
```

[7]:
```
Int64Index([3402, 3403, 3404, 3405, 3406, 3407, 3408, 3409, 3410, 3411, 3412,
            3413, 3414, 3415],
           dtype='int64')
```

[8]:
```
len(spa.index)
```

[8]:
```
14
```

[9]:
```
lustros_keys = [i for i in range(0,len(spa.index))]
lustros_keys
```

[9]:
```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]
```

[10]:
```
p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
show(p)
```

[11]:
```
lustros_labels = list(spa['Year(s)'])
lustros_labels
```

[11]:
```
['2015-2020',
 '2010-2015',
 '2005-2010',
 '2000-2005',
 '1995-2000',
 '1990-1995',
 '1985-1990',
 '1980-1985',
 '1975-1980',
 '1970-1975',
 '1965-1970',
 '1960-1965',
 '1955-1960',
 '1950-1955']
```

[12]:
```
x_labels = dict(zip(lustros_keys, lustros_labels))
x_labels
```

[12]:
```
{0: '2015-2020',
 1: '2010-2015',
 2: '2005-2010',
 3: '2000-2005',
 4: '1995-2000',
 5: '1990-1995',
 6: '1985-1990',
 7: '1980-1985',
 8: '1975-1980',
 9: '1970-1975',
 10: '1965-1970',
 11: '1960-1965',
```

```
 12: '1955-1960',
 13: '1950-1955'}
```

[13]:
```
p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
p.xaxis.major_label_overrides = x_labels

show(p)
```

[14]:
```
p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
p.xaxis.major_label_overrides = x_labels
p.xaxis.major_label_orientation = 1.5*np.pi/4
show(p)
```

[15]:
```
p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
p.xaxis.major_label_overrides = x_labels
p.xaxis.major_label_orientation = 1.5*np.pi/4
p.x_range.flipped = True
show(p)
```

[16]:
```
from bokeh.models.annotations import Span

p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
p.xaxis.major_label_overrides = x_labels
p.xaxis.major_label_orientation = 1.5*np.pi/4

upper = Span(location=2.1, dimension='width',
             line_color='black', line_width=1.0, line_dash="dashed")
p.add_layout(upper)

p.x_range.flipped = True
show(p)
```

[17]:
```
from bokeh.models.annotations import Span, Label

p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
p.xaxis.major_label_overrides = x_labels
p.xaxis.major_label_orientation = 1.5*np.pi/4
```

```
upper = Span(location=2.1, dimension='width',
             line_color='black', line_width=1.0, line_dash="dashed")
p.add_layout(upper)

spa_tex = Label(x=lustros_keys[0], y=spa.Value.iloc[0], x_offset=8,
              text="España {}".format(spa.Value.iloc[-1]),
              text_baseline="middle",
              text_font_size="8px",
              text_color="indigo")
p.add_layout(spa_tex)

swe_tex = Label(x=lustros_keys[0], y=swe.Value.iloc[0], x_offset=8,
              text="Suecia {}".format(swe.Value.iloc[-1]),
              text_baseline="middle",
              text_font_size="8px",
              text_color="green")
p.add_layout(swe_tex)


p.x_range.flipped = True
show(p)
```

[18]:
```
p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
p.xaxis.major_label_overrides = x_labels
p.xaxis.major_label_orientation = 1.5*np.pi/4

upper = Span(location=2.1, dimension='width',
             line_color='black', line_width=1.0, line_dash="dashed")
p.add_layout(upper)

spa_tex = Label(x=lustros_keys[0], y=spa.Value.iloc[0], x_offset=8,
              text="España {}".format(spa.Value.iloc[-1]),
              text_baseline="middle",
              text_font_size="8px",
              text_color="indigo")
p.add_layout(spa_tex)

swe_tex = Label(x=lustros_keys[0], y=swe.Value.iloc[0], x_offset=8,
              text="Suecia {}".format(swe.Value.iloc[-1]),
              text_baseline="middle",
              text_font_size="8px",
              text_color="green")
p.add_layout(swe_tex)
```

```
pais = paises.get_group('Yemen')
p.line(x=lustros_keys, y=pais['Value'], color="gray",
       line_width=0.75, alpha=0.5)

p.x_range.flipped = True
show(p)
```

[19]:
```
p = figure(width=300, height=300)
p.line(x=lustros_keys, y=spa['Value'], color="indigo", line_width=2.0)
p.line(x=lustros_keys, y=swe['Value'], color="green", line_width=2.0)
p.xaxis.major_label_overrides = x_labels
p.xaxis.major_label_orientation = 1.5*np.pi/4

upper = Span(location=2.1, dimension='width',
             line_color='black', line_width=1.0, line_dash="dashed")
p.add_layout(upper)

spa_tex = Label(x=lustros_keys[0], y=spa.Value.iloc[0], x_offset=8,
              text="España {}".format(spa.Value.iloc[-1]),
              text_baseline="middle",
              text_font_size="8px",
              text_color="indigo")
p.add_layout(spa_tex)

swe_tex = Label(x=lustros_keys[0], y=swe.Value.iloc[0], x_offset=8,
              text="Suecia {}".format(swe.Value.iloc[-1]),
              text_baseline="middle",
              text_font_size="8px",
              text_color="green")
p.add_layout(swe_tex)

for kpais in paises.groups.keys():
    pais = paises.get_group(kpais)
    p.line(x=lustros_keys, y=pais['Value'], color="gray",
       line_width=0.75, alpha=0.5)

p.x_range.flipped = True
show(p)
```

```
BokehUserWarning: ColumnDataSource's columns must be of the same length. Current
lengths: ('x', 14), ('y', 28)
BokehUserWarning: ColumnDataSource's columns must be of the same length. Current
lengths: ('x', 14), ('y', 28)
BokehUserWarning: ColumnDataSource's columns must be of the same length. Current
lengths: ('x', 14), ('y', 28)
```

[ ]: