29_rural_urban

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1 Population Graph Pakistan

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Genarating Rural, Urban, and Total Population line graph of Pakistan.

Data: 1990-2018 Data Source: FAOSTAT

[ ]:
```
# importing libraries
import matplotlib.pyplot as plt
import pandas as pd
import seaborn as sns
```

[ ]:
```
# Define required function to add population
def add_total(year, total):
    """Adds Total Population Value after each year row

        Args:
            year: Year to add total population

            total: Total population for the provided year

        Returns:
            None
    """
    rindex = list(required_data.loc[required_data['Year'] == year].index)[-1]
    new_index = rindex + 0.5
    required_data.loc[new_index] = {'Element': 'Total Population', 'Year':␣
 ↪year, 'Value': total}
```

[ ]:
```
# loading required data
required_columns = ["Element", "Year", "Value"]
# load only required data
required_data = pd.read_csv("../../data/FAOSTAT_data_rural_urban_population.
 ↪csv", usecols=required_columns)
```

[ ]:
```
# Current data is in Thousands, Convert into Million i.e. from K to M
required_data["Value"] = required_data["Value"].apply(lambda x: int(x // 1000))
required_data
```

[ ]:

	Element	Year	Value
0	Rural population	1990	74
1	Urban population	1990	32
2	Urban population	1991	34
3	Rural population	1991	76
4	Rural population	1992	78
5	Urban population	1992	35
6	Urban population	1993	36
7	Rural population	1993	80
8	Rural population	1994	81
9	Urban population	1994	37
10	Urban population	1995	39
11	Rural population	1995	83
12	Rural population	1996	85
13	Urban population	1996	40
14	Urban population	1997	41
15	Rural population	1997	87
16	Rural population	1998	89
17	Urban population	1998	43
18	Urban population	1999	44
19	Rural population	1999	91
20	Rural population	2000	92
21	Urban population	2000	45
22	Urban population	2001	46
23	Rural population	2001	94
24	Rural population	2002	96
25	Urban population	2002	48
26	Urban population	2003	49
27	Rural population	2003	98
28	Rural population	2004	99
29	Urban population	2004	50
30	Urban population	2005	52
31	Rural population	2005	101
32	Rural population	2006	103
33	Urban population	2006	53
34	Urban population	2007	55
35	Rural population	2007	105
36	Rural population	2008	107
37	Urban population	2008	56
38	Urban population	2009	58
39	Rural population	2009	108
40	Rural population	2010	110
41	Urban population	2010	59
42	Urban population	2011	61
43	Rural population	2011	112
44	Rural population	2012	114
45	Urban population	2012	62

```
46  Urban population  2013     64
47  Rural population  2013    116
48  Rural population  2014    119
49  Urban population  2014     66
50  Urban population  2015     68
51  Rural population  2015    121
52  Rural population  2016    123
53  Urban population  2016     70
54  Urban population  2017     71
55  Rural population  2017    125
56  Rural population  2018    127
57  Urban population  2018     73
```

[ ]:
```
year_sum = required_data.groupby(["Year"])["Value"].sum()
year_sum
```

[ ]:
```
Year
1990    106
1991    110
1992    113
1993    116
1994    118
1995    122
1996    125
1997    128
1998    132
1999    135
2000    137
2001    140
2002    144
2003    147
2004    149
2005    153
2006    156
2007    160
2008    163
2009    166
2010    169
2011    173
2012    176
2013    180
2014    185
2015    189
2016    193
2017    196
2018    200
Name: Value, dtype: int64
```

[ ]:
```
years_list = list(year_sum.index)
years_list
```

[ ]:
```
[1990,
 1991,
 1992,
 1993,
 1994,
 1995,
 1996,
 1997,
 1998,
 1999,
 2000,
 2001,
 2002,
 2003,
 2004,
 2005,
 2006,
 2007,
 2008,
 2009,
 2010,
 2011,
 2012,
 2013,
 2014,
 2015,
 2016,
 2017,
 2018]
```

[ ]:
```
# add Total Population Value after each year in a loop
for index_year, total_value in year_sum.iteritems():
    add_total(index_year, total_value)

required_data
```

[ ]:

	Element	Year	Value
0.0	Rural population	1990	74
1.0	Urban population	1990	32
2.0	Urban population	1991	34
3.0	Rural population	1991	76
4.0	Rural population	1992	78
…	…	…	…
49.5	Total Population	2014	185

```
51.5  Total Population  2015    189
53.5  Total Population  2016    193
55.5  Total Population  2017    196
57.5  Total Population  2018    200

[87 rows x 3 columns]
```

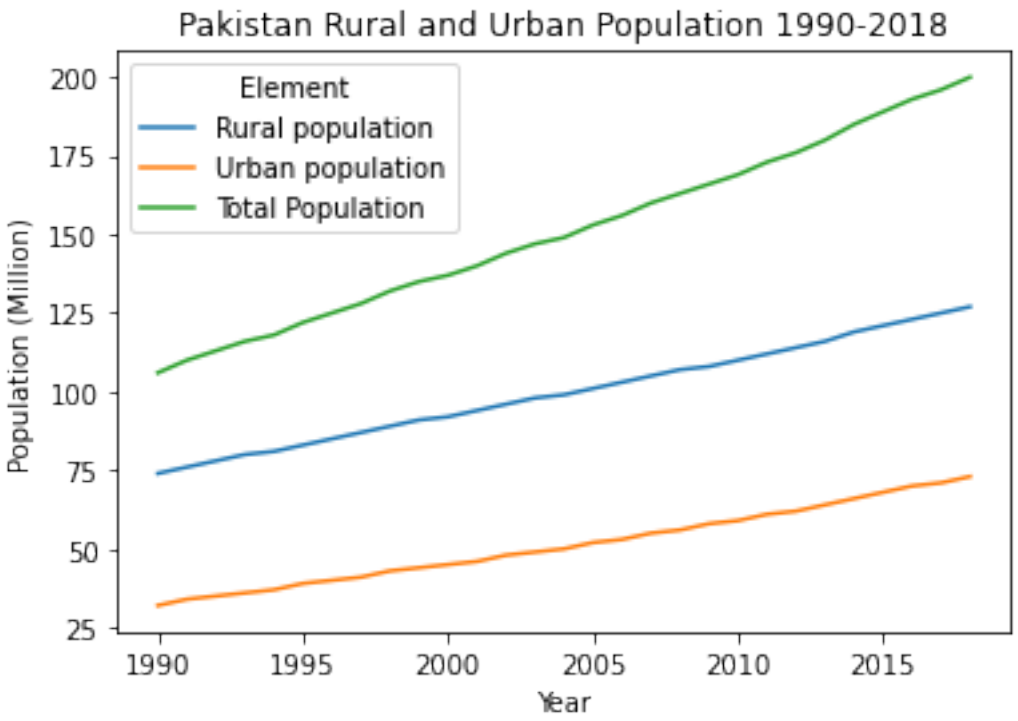
[ ]:
```
# sort and reset index
required_data = required_data.sort_index().reset_index(drop=True)
required_data
```

[ ]:
```
              Element  Year  Value
0   Rural population  1990     74
1   Urban population  1990     32
2   Total Population  1990    106
3   Urban population  1991     34
4   Rural population  1991     76
..               …   …    …
82  Rural population  2017    125
83  Total Population  2017    196
84  Rural population  2018    127
85  Urban population  2018     73
86  Total Population  2018    200

[87 rows x 3 columns]
```

[ ]:
```
# Save modified data
required_data.to_csv("../../data/rural_urban_total_population_pakistan.csv",␣
  ↪index=False)
```

[ ]:
```
# Draw a line graph
sns.lineplot(x="Year", y="Value", hue="Element", data=required_data)
plt.title("Pakistan Rural and Urban Population 1990-2018")
plt.xlabel("Year")
plt.ylabel("Population (Million)")
plt.show()
```


Pakistan Rural and Urban Population 1990-2018
Element
Rural population
Urban population
Total Population
Population (Million)
200
175
150
125
100
75
50
25
1990
1995
2000
2005
2010
2015
Year