Population

May 11, 2021

0.1 World Population Growth Rate is declining

According to a study published in The Lancet: "world population will likely peak in 2064 at around 9.7 billion, and then decline to about 8.8 billion by 2100 – about 2 billion lower than some previous estimates".

Using world bank data on the population the following analysis indeed confirms declining trend in annual population growth in the world.

0.1.1 Liabraries

Libraries required to run this doc: pandas, numpy, plt, seaborn, wbdata, requests, bs4, warnings

0.1.2 Countries

There are 219 countries in the list and the world

Status code: 200

0.1.3 Helper functions

Helper functions: define_region, define_income_region, get_data, color_negative_red, highligh_max, highlight_min

0.1.4 Population

- SP.POP.TOTL (Population, total)
- SP.POP.GROW (Population growth (annual %))

- SP.POP.TOTL.FE.ZS (Population, female (% of total population))
- SP.POP.TOTL.MA.ZS (Population, male (% of total population))

Get Data

[117]:

	year	country	Population_total	region	income_level
2901	2011	Zimbabwe	12894316.0	sub-saharan-africa	middle-income
2902	2010	Zimbabwe	12697723.0	sub-saharan-africa	middle-income
2903	2009	Zimbabwe	12526968.0	sub-saharan-africa	middle-income

[120]:

	year	country	Population_growth_(annual_%)
2901	2011	Zimbabwe	1.536391
2902	2010	Zimbabwe	1.353893
2903	2009	Zimbabwe	1.183792

[122]:

	year	country	Population_female_(%_of_total_population)
2901	2011	Zimbabwe	52.389009
2902	2010	Zimbabwe	52.361367
2903	2009	Zimbabwe	52.339905

[124]:

	year	country	Population_male_(%_of_total_population)
2901	2011	Zimbabwe	47.610991
2902	2010	Zimbabwe	47.638633
2903	2009	Zimbabwe	47.660095

World population by region and income level

[126]:

	year	country	Population_total_MLN	region	income_level
506	2019	World	7673.656872	None	None
507	2018	World	7592.026859	None	None
508	2017	World	7509.105465	None	None
509	2016	World	7424.311044	None	None
510	2015	World	7338.978658	None	None
511	2014	World	7254.231872	None	None
512	2013	World	7169.636255	None	None
513	2012	World	7085.760929	None	None
514	2011	World	7002.859831	None	None
515	2010	World	6921.871605	None	None
516	2009	World	6839.574287	None	None
517	2019	Afghanistan	38.041754	south-asia	low-income
518	2018	Afghanistan	37.172386	south-asia	low-income
519	2017	Afghanistan	36.296400	south-asia	low-income
520	2016	Afghanistan	35.383128	south-asia	low-income
521	2015	Afghanistan	34.413603	south-asia	low-income
522	2014	Afghanistan	33.370794	south-asia	low-income
523	2013	Afghanistan	32.269589	south-asia	low-income
524	2012	Afghanistan	31.161376	south-asia	low-income
525	2011	Afghanistan	30.117413	south-asia	low-income

World Population Growth, 2009 - 2019
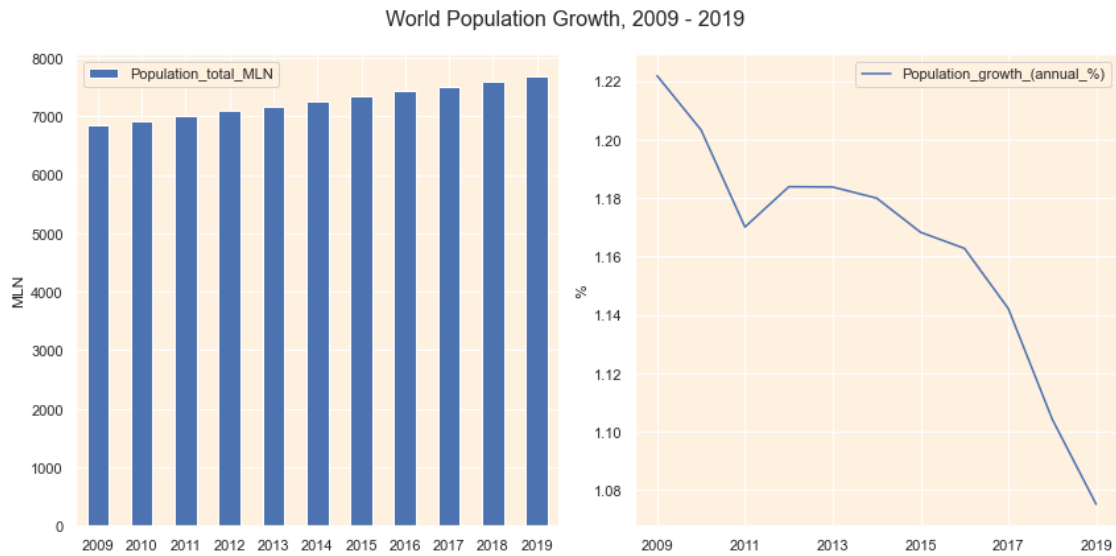
For period 2009 - 2019
World Population increased by 834.0 MLN,
Population growth rate increased by -0.14654 %.

World Population by geography and income level, 2009 - 2019
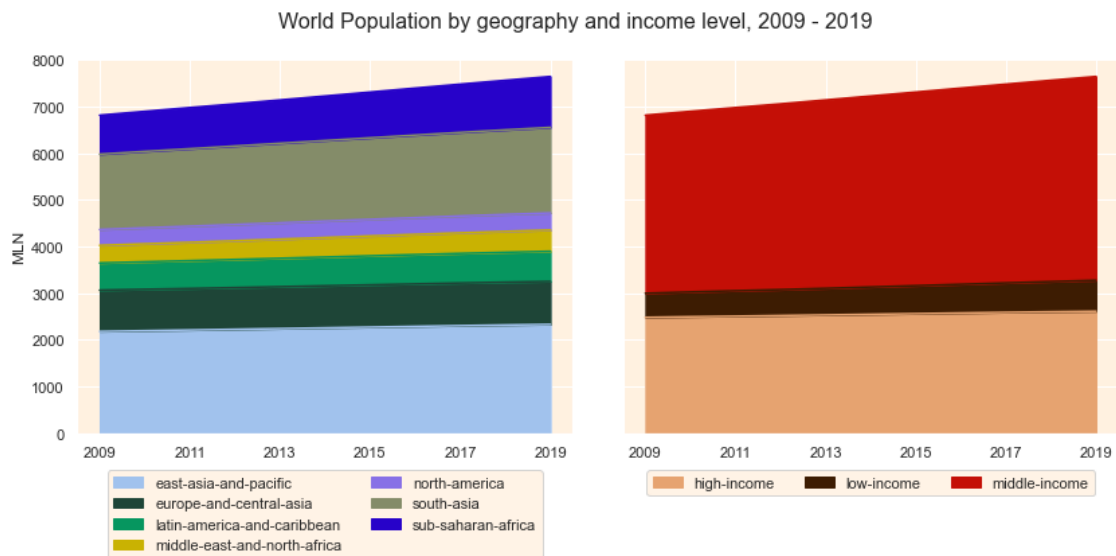
```
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Country with highest annual population growth rate in 2019:


        country                          region  Population_growth_(annual_%)
671     Bahrain  middle-east-and-north-africa                       4.469239



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Country with lowest annual population growth rate in 2019:


        country                      region  Population_growth_(annual_%)
1936    Moldova  europe-and-central-asia                      -1.674182
```
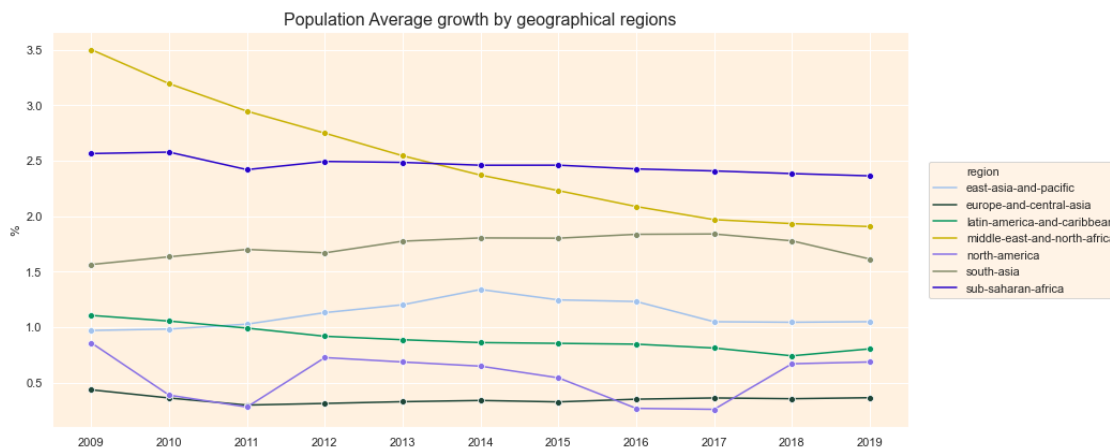
Population Average growth by geographical regions


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Most striking decline in growth rate occured in the Middle East & North Africa
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Statistical summary of population growth in MENA region for period 2009 - 2019
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```
[133]: count    231.000000
       mean       2.493422
       std        2.221307
       min       -4.536565
       25%        1.355567
       50%        2.033592
       75%        2.998202
       max       14.144634
       Name: Population_growth_(annual_%), dtype: float64
```
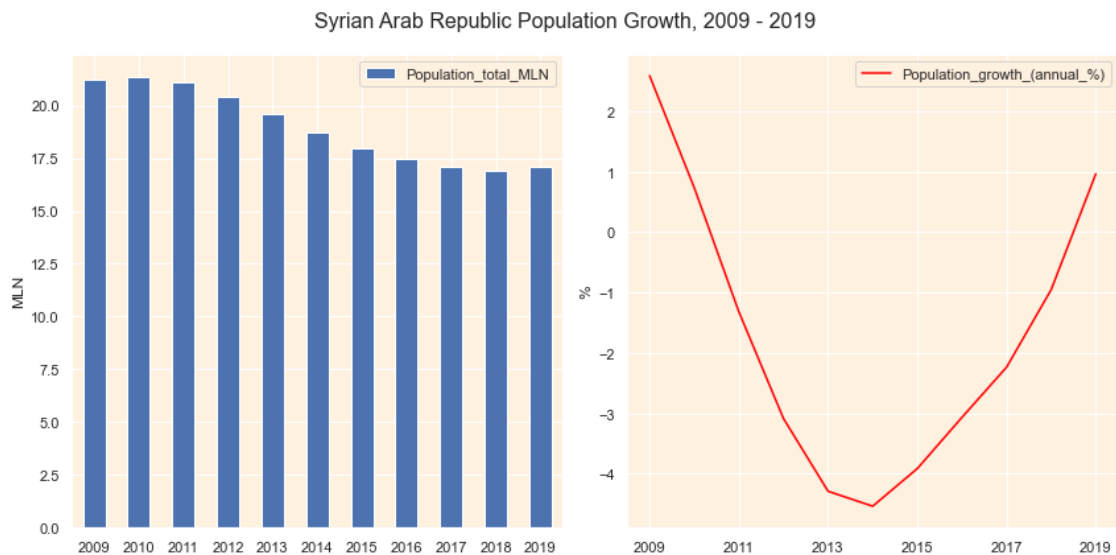
```
--------------------------------------------------------------------------
Min growth rate is nagative -4.53..%
```

[134]:
```
         year                 country  Population_growth_(annual_%)
2604     2011   Syrian Arab Republic                     -1.317299
2603     2012   Syrian Arab Republic                     -3.084734
2602     2013   Syrian Arab Republic                     -4.289118
2601     2014   Syrian Arab Republic                     -4.536565
2600     2015   Syrian Arab Republic                     -3.913350
2599     2016   Syrian Arab Republic                     -3.066274
2598     2017   Syrian Arab Republic                     -2.235953
2597     2018   Syrian Arab Republic                     -0.952015
```

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Syrian Arab Republic suffered negative population growth rate during 2011-2018,
the beginning of the civil war 2011-present.
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Syrian Arab Republic Population Growth, 2009 - 2019

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Max growth rate is   14.14..%
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[137]:
```
         year                 country  Population_growth_(annual_%)
681      2009                 Bahrain                      6.127453
2276     2009                   Qatar                     14.144634
1693     2009                  Kuwait                      6.028276
1616     2009                  Jordan                      5.009055
2771     2009   United Arab Emirates                     11.044635
2275     2010                   Qatar                     11.482901
```
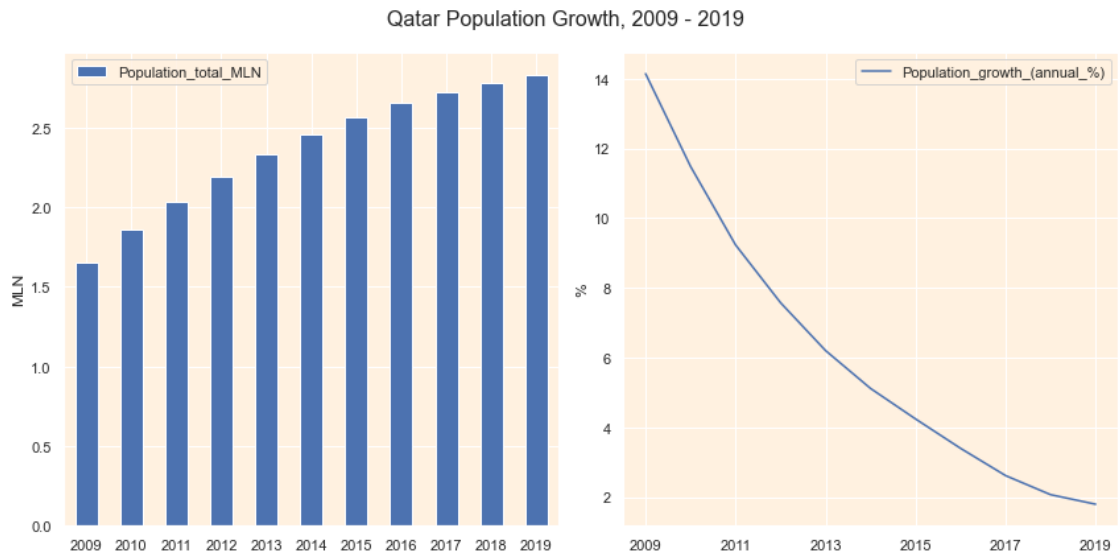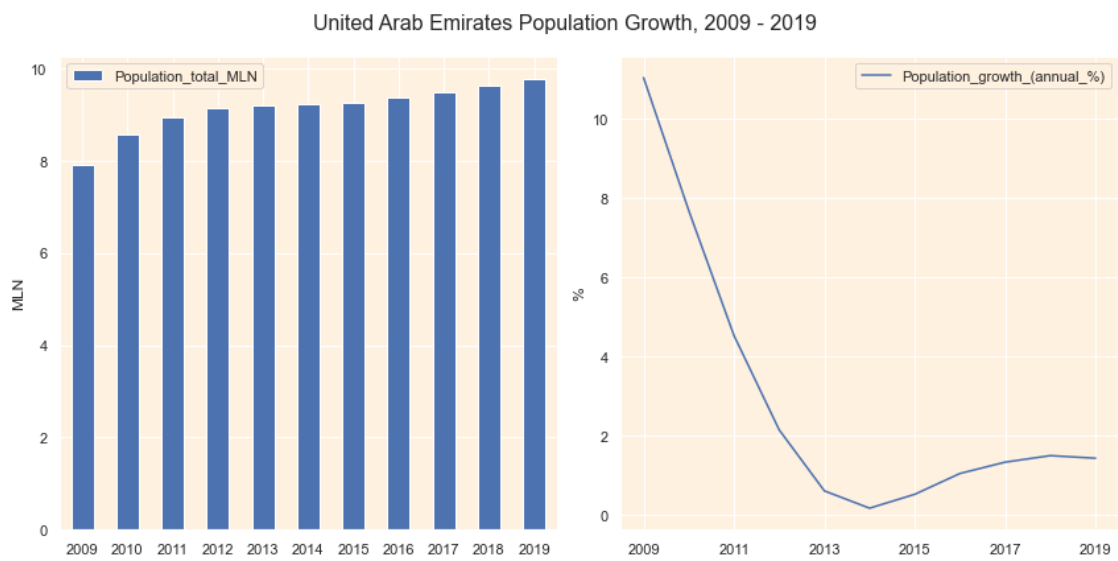
```
1692  2010             Kuwait                5.879591
2154  2010              Oman                 5.586400
2770  2010  United Arab Emirates            7.687055
1615  2010             Jordan                5.204767
1614  2011             Jordan                5.382886
2274  2011              Qatar                9.232393
1691  2011             Kuwait                5.721612
2153  2011              Oman                 6.666675
2273  2012              Qatar                7.574748
2152  2012              Oman                 7.320381
1734  2012             Lebanon               6.263880
1613  2012             Jordan                5.431587
1690  2012             Kuwait                5.549849
1733  2013             Lebanon               6.567952
2272  2013              Qatar                6.201453
1689  2013             Kuwait                5.165282
1612  2013             Jordan                5.172912
2151  2013              Oman                 7.349640
1732  2014             Lebanon               5.713767
2271  2014              Qatar                5.114953
2150  2014              Oman                 6.739018
2149  2015              Oman                 5.790631

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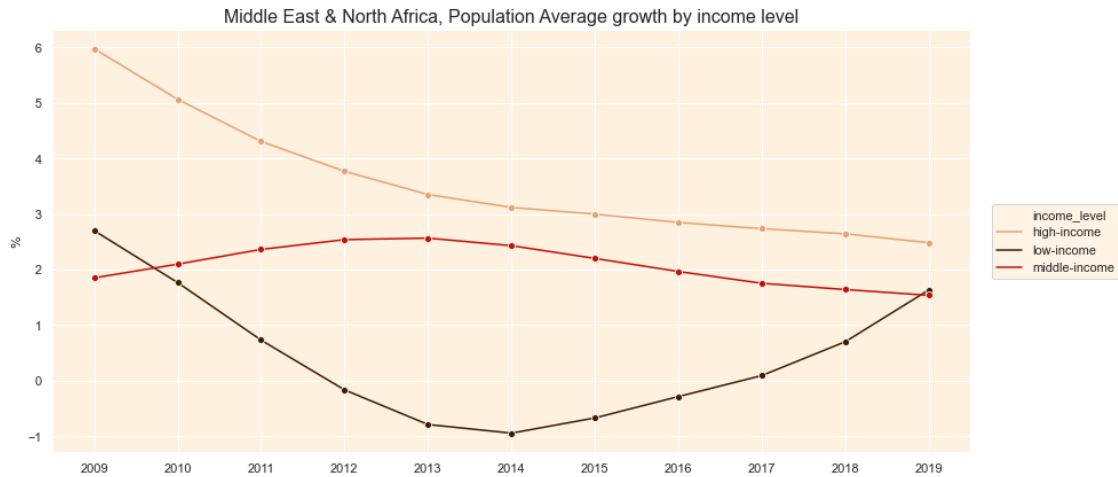
Gulf countries and Lebanon had population growth rates
above 5% during the study period,
with Qatar having the highest 14+ % growth in 2009,
followed by sharp decline to 2-% in 2019,
perhaps due to decline in increase of
expat population following 2008-2009 financial crisis.

Qatar Population Growth, 2009 - 2019

Similar trend occured in United Arab Emirates

United Arab Emirates Population Growth, 2009 - 2019

Middle East & North Africa, Population Average growth by income level

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High-Income Countries/periods with average growth rates 2-3%

[141]:		year	country	Population_growth_(annual_%)
	1572	2009	Israel	2.390207
	2353	2009	Saudi Arabia	2.824934
	2352	2010	Saudi Arabia	2.927618
	679	2011	Bahrain	2.960981
	2768	2012	United Arab Emirates	2.154163
	2348	2014	Saudi Arabia	2.835955
	2347	2015	Saudi Arabia	2.556784
	675	2015	Bahrain	2.642471
	1874	2015	Malta	2.386395
	2346	2016	Saudi Arabia	2.259767
	1873	2016	Malta	2.288615
	2268	2017	Qatar	2.615829
	2345	2017	Saudi Arabia	2.003600
	1872	2017	Malta	2.738663
	1685	2017	Kuwait	2.476710
	2267	2018	Qatar	2.068684
	2145	2019	Oman	2.968313

Most and least populous countries as of recent

[142]:		country	Population_total_MLN
	2728	Tuvalu	0.011646
	2024	Nauru	0.012581
	2167	Palau	0.018008
	814	British Virgin Islands	0.030030
	1342	Gibraltar	0.033701

```
 …                            …                           …
 1507              Indonesia            270.625568
 2783          United States            328.239523
 1496                  India           1366.417754
 968                   China           1397.715000
 506                   World           7673.656872

[216 rows x 2 columns]
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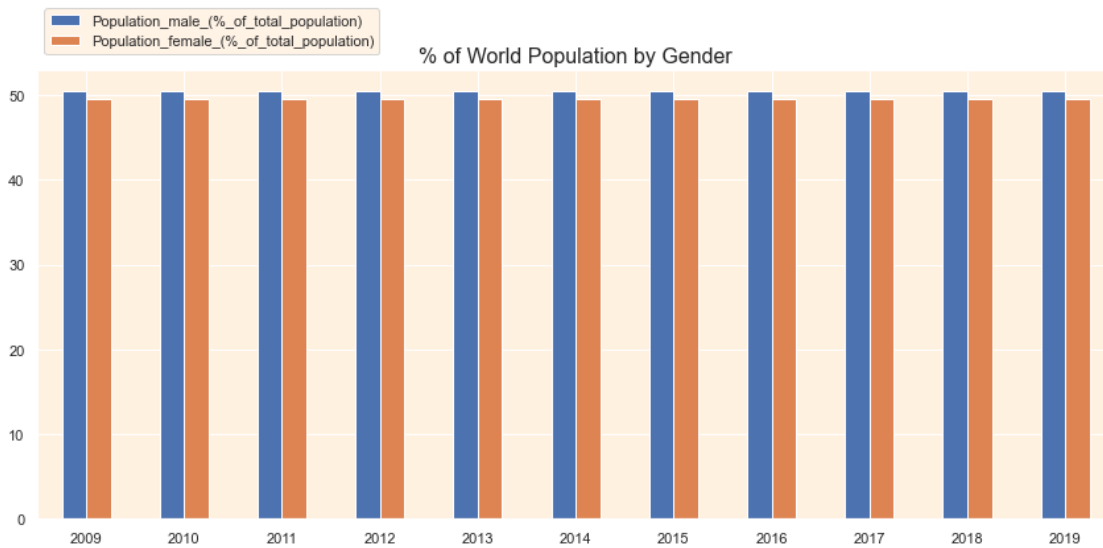
20 Most populous countries, 2019 (MLN)

20 Least populous countries, 2019 (MLN)

Country	Value
Andorra	
Dominica	
Cayman Islands	
Bermuda	
Marshall Islands	
Northern Mariana Islands	
Greenland	
American Samoa	
St. Kitts and Nevis	
Faroe Islands	
Monaco	
Turks and Caicos Islands	
Liechtenstein	
St. Martin (French part)	
San Marino	
Gibraltar	
British Virgin Islands	
Palau	
Nauru	
Tuvalu	

Population by gender

% of World Population by Gender

- Population_male_(%_of_total_population)
- Population_female_(%_of_total_population)

Female as % of total population, Average by regions

Two regions stand out for low % of Female populatin: MENA and South Asia
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Statistical summary, % of female population for South-Asia

[148]: count   88.000000
   mean   48.487914
       std   3.466564
       min   36.704856
       25%   47.845370
       50%   48.569125
       75%   49.674029
       max   54.564823
       Name: Population_female_(%_of_total_population), dtype: float64

       Min % is 36.7..%

[149]:   year   country Population_female_(%_of_total_population)
       1856 2011 Maldives   44.743530
       1855 2012 Maldives   43.702279
       1854 2013 Maldives   42.591051
       1853 2014 Maldives   41.457135
       1852 2015 Maldives   40.347626
       1851 2016 Maldives   39.235550
       1850 2017 Maldives   38.159904
       1849 2018 Maldives   37.264981
       1848 2019 Maldives   36.704856

Maldives is the country with the lowest % of female population in South Asia,
which is apprently declines further.
Maldives also suffered sharp population growth rate decline in past 5 years:

Maldives: Female Population and Total Population Growth rate, 2009 - 2019
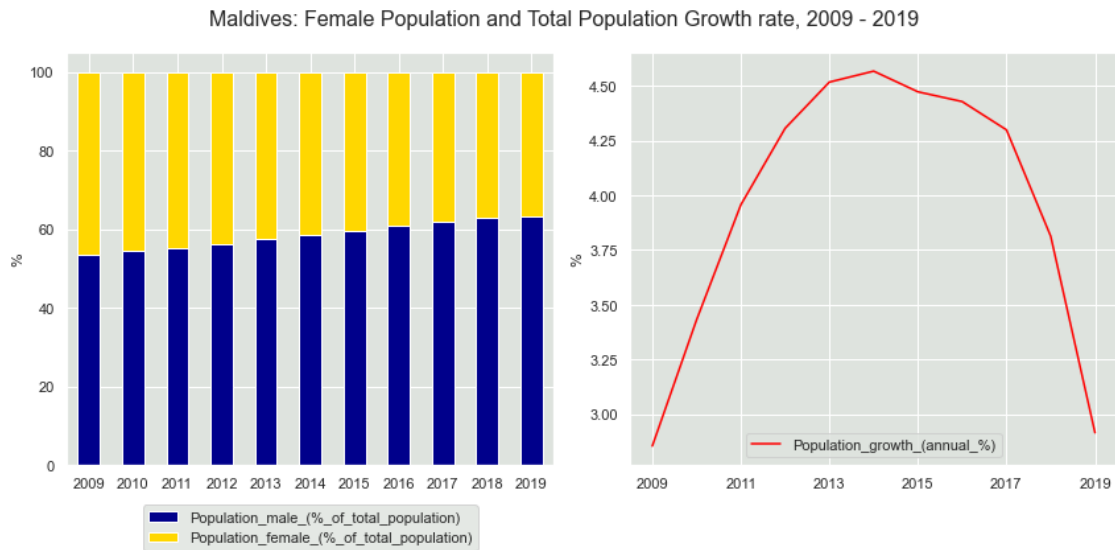
Statistical summary, % of female population for MENA

[151]: count   231.000000
   mean   45.390768
       std   7.573904
       min   23.289054
       25%   42.793675
       50%   49.420705
       75%   49.602758
       max   50.703216
       Name: Population_female_(%_of_total_population), dtype: float64

Min % is 23.2..%

[152]:   year country Population_female_(%_of_total_population)
       2276 2009 Qatar   24.252422
       2275 2010 Qatar   23.543240
       2274 2011 Qatar   23.289054

```
2273   2012    Qatar                                                23.326630
2272   2013    Qatar                                                23.530469
2271   2014    Qatar                                                23.775721
2270   2015    Qatar                                                23.989441
2269   2016    Qatar                                                24.166067
2268   2017    Qatar                                                24.332566
2267   2018    Qatar                                                24.495287
2266   2019    Qatar                                                24.665695


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Most of Gulf countries have female population around 45% of total population
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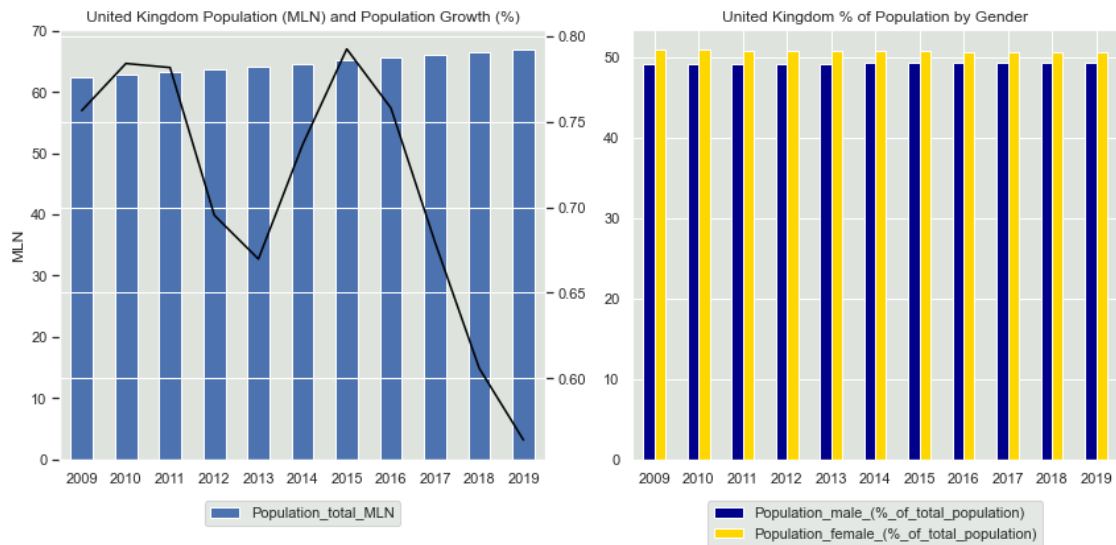
Female population as % of total country population in Gulf countries for period 2009 - 2019
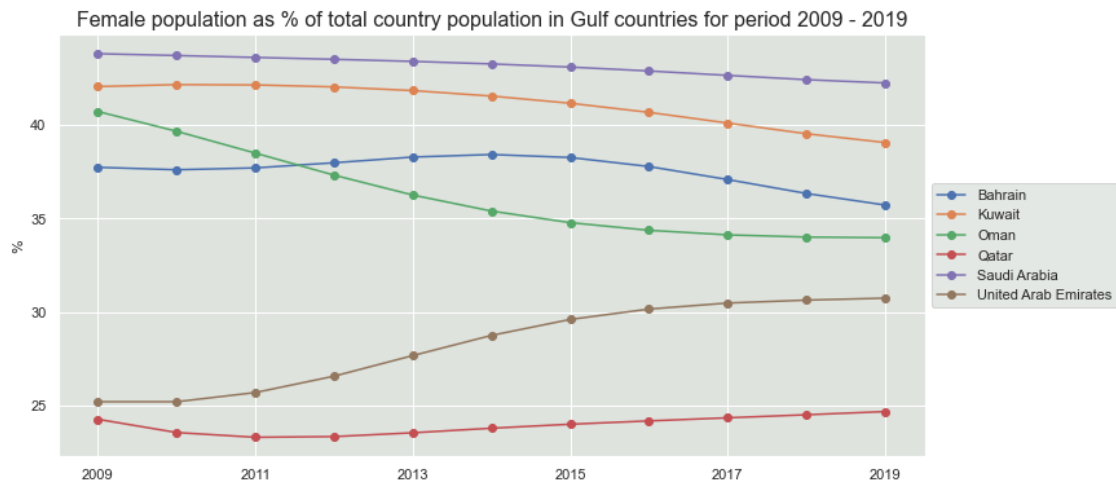
Summary for a Country population

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United Kingdom
    Region: europe-and-central-asia
    Income level: high-income
    Population in 2019: 66.836327 MLN


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```

United Kingdom Population (MLN) and Population Growth (%) — United Kingdom % of Population by Gender

```
Population_total_MLN
Population_male_(%_of_total_population)
Population_female_(%_of_total_population)
```

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China

    Region: east-asia-and-pacific
    Income level: high-income
    Population in 2019: 1397.715 MLN

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China Population (MLN) and Population Growth (%) — China % of Population by Gender

```
Population_total_MLN
Population_male_(%_of_total_population)
Population_female_(%_of_total_population)
```
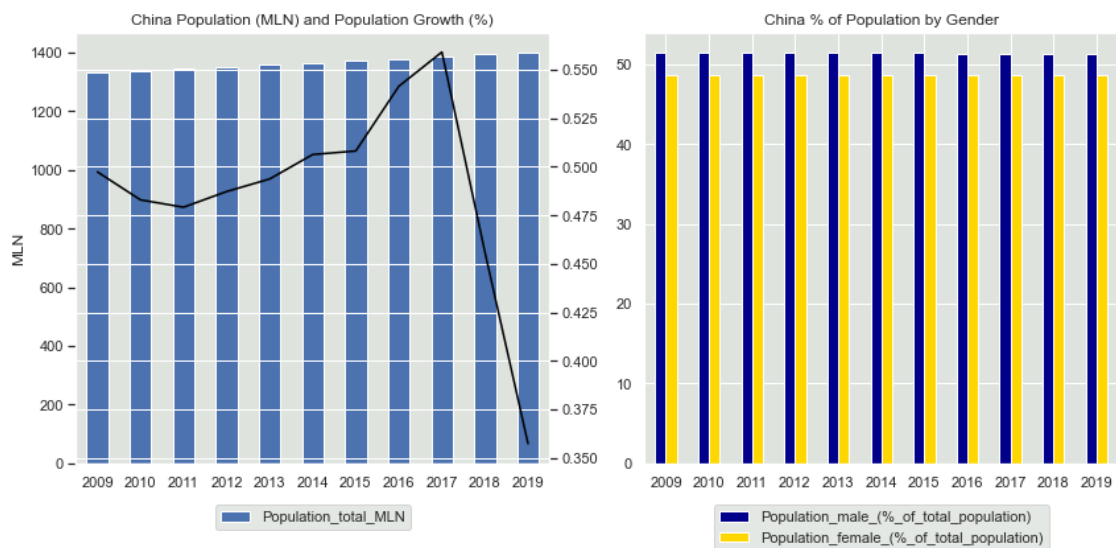
Azerbaijan
    Region: europe-and-central-asia
    Income level: middle-income
    Population in 2019: 10.024283 MLN

Azerbaijan Population (MLN) and Population Growth (%)

Azerbaijan % of Population by Gender