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IDE Used: Jupyter Notebook

Task 01: Create a bar chart or histogram to visualize the distribution of a categorical or continuous variable,such as the distribution of ages or genders in a population

Import Libraries

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import os
```

Import Data

```
pop=pd.read_csv('population.csv')

pop
```

```
                Country Name Country Code  \
0                Afghanistan          AFG
1                    Albania          ALB
2                    Algeria          DZA
3             American Samoa          ASM
4                    Andorra          AND
...                      ...          ...
1080  Virgin Islands (U.S.)          VIR
1081     West Bank and Gaza          PSE
1082             Yemen, Rep.          YEM
1083                  Zambia          ZMB
1084                Zimbabwe          ZWE

                                    Indicator Name     Indicator Code  \
0                                Population, total        SP.POP.TOTL
1                                Population, total        SP.POP.TOTL
2                                Population, total        SP.POP.TOTL
3                                Population, total        SP.POP.TOTL
4                                Population, total        SP.POP.TOTL
...                                            ...                ...
1080  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
1081  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
1082  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
1083  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
```

```
1084  Population, female (% of total population)  SP.POP.TOTL.FE.ZS

               2001          2002          2003          2004
2005  \
0     1.968863e+07  2.100026e+07  2.264513e+07  2.355355e+07
2.441119e+07
1     3.060173e+06  3.051010e+06  3.039616e+06  3.026939e+06
3.011487e+06
2     3.120098e+07  3.162470e+07  3.205588e+07  3.251019e+07
3.295669e+07
3     5.832400e+04  5.817700e+04  5.794100e+04  5.762600e+04
5.725400e+04
4     6.782000e+04  7.084900e+04  7.390700e+04  7.693300e+04
7.982600e+04
...            ...           ...           ...           ...
...
1080  5.227487e+01  5.224600e+01  5.221180e+01  5.217579e+01
5.214733e+01
1081  4.967837e+01  4.975177e+01  4.983246e+01  4.991005e+01
4.997135e+01
1082  4.956276e+01  4.954006e+01  4.951833e+01  4.949728e+01
4.947748e+01
1083  5.177003e+01  5.168635e+01  5.160637e+01  5.152310e+01
5.142859e+01
1084  5.253953e+01  5.257157e+01  5.261238e+01  5.267591e+01
5.276857e+01

               2006  ...          2013          2014          2015  \
0     2.544294e+07  ...  3.154121e+07  3.271621e+07  3.375350e+07
1     2.992547e+06  ...  2.895092e+06  2.889104e+06  2.880703e+06
2     3.343508e+07  ...  3.800063e+07  3.876017e+07  3.954315e+07
3     5.683700e+04  ...  5.299500e+04  5.221700e+04  5.136800e+04
4     8.022100e+04  ...  7.136700e+04  7.162100e+04  7.174600e+04
...            ...  ...           ...           ...           ...
1080  5.212930e+01  ...  5.230641e+01  5.237031e+01  5.245859e+01
1081  5.001668e+01  ...  5.018161e+01  5.020307e+01  5.021980e+01
1082  4.946098e+01  ...  4.937444e+01  4.936489e+01  4.936569e+01
1083  5.132306e+01  ...  5.082609e+01  5.079119e+01  5.076178e+01
1084  5.280904e+01  ...  5.305832e+01  5.302871e+01  5.299989e+01

               2016          2017          2018          2019
2020  \
0     3.463621e+07  3.564342e+07  3.668678e+07  3.776950e+07
3.897223e+07
1     2.876101e+06  2.873457e+06  2.866376e+06  2.854191e+06
2.837849e+06
2     4.033933e+07  4.113655e+07  4.192701e+07  4.270537e+07
4.345167e+07
3     5.044800e+04  4.946300e+04  4.842400e+04  4.732100e+04
4.618900e+04
```

```
4     7.254000e+04  7.383700e+04  7.501300e+04  7.634300e+04
7.770000e+04
...            ...           ...           ...           ...
...
1080  5.256558e+01  5.268579e+01  5.281409e+01  5.294269e+01
5.308636e+01
1081  5.022528e+01  5.021401e+01  5.018863e+01  5.016446e+01
5.014104e+01
1082  4.937435e+01  4.938303e+01  4.940339e+01  4.942868e+01
4.944568e+01
1083  5.073599e+01  5.071160e+01  5.069091e+01  5.067376e+01
5.066170e+01
1084  5.297311e+01  5.294839e+01  5.292376e+01  5.290020e+01
5.286933e+01

              2021          2022
0     4.009946e+07  4.112877e+07
1     2.811666e+06  2.775634e+06
2     4.417797e+07  4.490322e+07
3     4.503500e+04  4.427300e+04
4     7.903400e+04  7.982400e+04
...            ...           ...
1080  5.323556e+01  5.338561e+01
1081  5.012218e+01  5.010634e+01
1082  4.946149e+01  4.948097e+01
1083  5.065505e+01  5.065540e+01
1084  5.283285e+01  5.278586e+01

[1085 rows x 26 columns]
```

| Data Overview

```
#shape of the data
pop.shape
```

```
(1085, 26)
```

```
pop.describe()
```

```
               2001          2002          2003          2004
2005  \
count  1.085000e+03  1.085000e+03  1.085000e+03  1.085000e+03
1.085000e+03
mean   1.143598e+07  1.158653e+07  1.173626e+07  1.188626e+07
1.203685e+07
std    6.490862e+07  6.565651e+07  6.638386e+07  6.710041e+07
6.780708e+07
min    3.156689e+01  3.146521e+01  3.137472e+01  3.129133e+01
```

```
3.096426e+01
25%    5.038254e+01  5.039371e+01  5.039432e+01  5.036210e+01
5.037186e+01
50%    1.136410e+05  1.134500e+05  1.136960e+05  1.152950e+05
1.171330e+05
75%    4.535518e+06  4.698968e+06  4.758988e+06  4.813244e+06
4.989584e+06
max    1.271850e+09  1.280400e+09  1.288400e+09  1.296075e+09
1.303720e+09

                2006          2007          2008          2009
2010  \
count  1.085000e+03  1.085000e+03  1.085000e+03  1.085000e+03
1.085000e+03
mean   1.218858e+07  1.234099e+07  1.249535e+07  1.265031e+07
1.280537e+07
std    6.849229e+07  6.915934e+07  6.982016e+07  7.047509e+07
7.113128e+07
min    2.831990e+01  2.520779e+01  2.356750e+01  2.339422e+01
2.425072e+01
25%    5.038085e+01  5.036880e+01  5.037388e+01  5.036836e+01
5.034833e+01
50%    1.190890e+05  1.209490e+05  1.228070e+05  1.244660e+05
1.263090e+05
75%    5.007301e+06  5.062560e+06  5.100083e+06  5.187356e+06
5.267970e+06
max    1.311020e+09  1.317885e+09  1.324655e+09  1.331260e+09
1.337705e+09

       ...          2013          2014          2015          2016  \
count  ...  1.085000e+03  1.085000e+03  1.085000e+03  1.085000e+03
mean   ...  1.328368e+07  1.344625e+07  1.360705e+07  1.376711e+07
std    ...  7.325356e+07  7.394894e+07  7.461740e+07  7.528760e+07
min    ...  2.594943e+01  2.540718e+01  2.474106e+01  2.464721e+01
25%    ...  5.033767e+01  5.032504e+01  5.033554e+01  5.033966e+01
50%    ...  1.328960e+05  1.349620e+05  1.371850e+05  1.406060e+05
75%    ...  5.480089e+06  5.524552e+06  5.544490e+06  5.629265e+06
max    ...  1.363240e+09  1.371860e+09  1.379860e+09  1.387790e+09

                2017          2018          2019          2020
2021  \
count  1.085000e+03  1.085000e+03  1.085000e+03  1.085000e+03
1.085000e+03
mean   1.392568e+07  1.407966e+07  1.422876e+07  1.437307e+07
1.449711e+07
std    7.596457e+07  7.657562e+07  7.712985e+07  7.763257e+07
7.801505e+07
min    2.508394e+01  2.573928e+01  2.676295e+01  2.735104e+01
2.732503e+01
25%    5.033041e+01  5.033917e+01  5.033040e+01  5.034171e+01
```

```
5.035172e+01
50%    1.441350e+05  1.457520e+05  1.459570e+05  1.461650e+05
1.463660e+05
75%    5.686999e+06  5.774185e+06  5.814422e+06  5.831404e+06
5.856733e+06
max    1.396215e+09  1.402760e+09  1.407745e+09  1.411100e+09
1.412360e+09

                2022
count  1.085000e+03
mean   1.461378e+07
std    7.832944e+07
min    2.749000e+01
25%    5.034029e+01
50%    1.465500e+05
75%    5.903468e+06
max    1.417173e+09

[8 rows x 22 columns]
```

```
pop.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1085 entries, 0 to 1084
Data columns (total 26 columns):
 #   Column          Non-Null Count  Dtype
---  ------          --------------  -----
 0   Country Name    1085 non-null   object
 1   Country Code    1085 non-null   object
 2   Indicator Name  1085 non-null   object
 3   Indicator Code  1085 non-null   object
 4   2001            1085 non-null   float64
 5   2002            1085 non-null   float64
 6   2003            1085 non-null   float64
 7   2004            1085 non-null   float64
 8   2005            1085 non-null   float64
 9   2006            1085 non-null   float64
 10  2007            1085 non-null   float64
 11  2008            1085 non-null   float64
 12  2009            1085 non-null   float64
 13  2010            1085 non-null   float64
 14  2011            1085 non-null   float64
 15  2012            1085 non-null   float64
 16  2013            1085 non-null   float64
 17  2014            1085 non-null   float64
 18  2015            1085 non-null   float64
 19  2016            1085 non-null   float64
 20  2017            1085 non-null   float64
 21  2018            1085 non-null   float64
 22  2019            1085 non-null   float64
```

```
 23  2020            1085 non-null   float64
 24  2021            1085 non-null   float64
 25  2022            1085 non-null   float64
dtypes: float64(22), object(4)
memory usage: 220.5+ KB

pop.value_counts

<bound method DataFrame.value_counts of                Country Name
Country Code  \
0               Afghanistan          AFG
1                   Albania          ALB
2                   Algeria          DZA
3            American Samoa          ASM
4                   Andorra          AND
...                     ...          ...
1080  Virgin Islands (U.S.)          VIR
1081     West Bank and Gaza          PSE
1082            Yemen, Rep.          YEM
1083                 Zambia          ZMB
1084               Zimbabwe          ZWE

                                  Indicator Name     Indicator Code  \
0                             Population, total        SP.POP.TOTL
1                             Population, total        SP.POP.TOTL
2                             Population, total        SP.POP.TOTL
3                             Population, total        SP.POP.TOTL
4                             Population, total        SP.POP.TOTL
...                                         ...                ...
1080  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
1081  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
1082  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
1083  Population, female (% of total population)  SP.POP.TOTL.FE.ZS
1084  Population, female (% of total population)  SP.POP.TOTL.FE.ZS

              2001          2002          2003          2004
2005  \
0     1.968863e+07  2.100026e+07  2.264513e+07  2.355355e+07
2.441119e+07
1     3.060173e+06  3.051010e+06  3.039616e+06  3.026939e+06
3.011487e+06
2     3.120098e+07  3.162470e+07  3.205588e+07  3.251019e+07
3.295669e+07
3     5.832400e+04  5.817700e+04  5.794100e+04  5.762600e+04
5.725400e+04
4     6.782000e+04  7.084900e+04  7.390700e+04  7.693300e+04
7.982600e+04
...            ...           ...           ...           ...
...
1080  5.227487e+01  5.224600e+01  5.221180e+01  5.217579e+01
```

```
5.214733e+01
1081  4.967837e+01  4.975177e+01  4.983246e+01  4.991005e+01
4.997135e+01
1082  4.956276e+01  4.954006e+01  4.951833e+01  4.949728e+01
4.947748e+01
1083  5.177003e+01  5.168635e+01  5.160637e+01  5.152310e+01
5.142859e+01
1084  5.253953e+01  5.257157e+01  5.261238e+01  5.267591e+01
5.276857e+01

              2006  ...          2013          2014          2015  \
0     2.544294e+07  ...  3.154121e+07  3.271621e+07  3.375350e+07
1     2.992547e+06  ...  2.895092e+06  2.889104e+06  2.880703e+06
2     3.343508e+07  ...  3.800063e+07  3.876017e+07  3.954315e+07
3     5.683700e+04  ...  5.299500e+04  5.221700e+04  5.136800e+04
4     8.022100e+04  ...  7.136700e+04  7.162100e+04  7.174600e+04
...            ...  ...           ...           ...           ...
1080  5.212930e+01  ...  5.230641e+01  5.237031e+01  5.245859e+01
1081  5.001668e+01  ...  5.018161e+01  5.020307e+01  5.021980e+01
1082  4.946098e+01  ...  4.937444e+01  4.936489e+01  4.936569e+01
1083  5.132306e+01  ...  5.082609e+01  5.079119e+01  5.076178e+01
1084  5.280904e+01  ...  5.305832e+01  5.302871e+01  5.299989e+01

              2016          2017          2018          2019
2020  \
0     3.463621e+07  3.564342e+07  3.668678e+07  3.776950e+07
3.897223e+07
1     2.876101e+06  2.873457e+06  2.866376e+06  2.854191e+06
2.837849e+06
2     4.033933e+07  4.113655e+07  4.192701e+07  4.270537e+07
4.345167e+07
3     5.044800e+04  4.946300e+04  4.842400e+04  4.732100e+04
4.618900e+04
4     7.254000e+04  7.383700e+04  7.501300e+04  7.634300e+04
7.770000e+04
...            ...           ...           ...           ...
...
1080  5.256558e+01  5.268579e+01  5.281409e+01  5.294269e+01
5.308636e+01
1081  5.022528e+01  5.021401e+01  5.018863e+01  5.016446e+01
5.014104e+01
1082  4.937435e+01  4.938303e+01  4.940339e+01  4.942868e+01
4.944568e+01
1083  5.073599e+01  5.071160e+01  5.069091e+01  5.067376e+01
5.066170e+01
1084  5.297311e+01  5.294839e+01  5.292376e+01  5.290020e+01
5.286933e+01

              2021          2022
0     4.009946e+07  4.112877e+07
```

```
1     2.811666e+06  2.775634e+06
2     4.417797e+07  4.490322e+07
3     4.503500e+04  4.427300e+04
4     7.903400e+04  7.982400e+04
...            ...           ...
1080  5.323556e+01  5.338561e+01
1081  5.012218e+01  5.010634e+01
1082  4.946149e+01  4.948097e+01
1083  5.065505e+01  5.065540e+01
1084  5.283285e+01  5.278586e+01

[1085 rows x 26 columns]>

pop.isnull()

      Country Name  Country Code  Indicator Name  Indicator Code
2001  \
0            False         False           False           False
False
1            False         False           False           False
False
2            False         False           False           False
False
3            False         False           False           False
False
4            False         False           False           False
False
...            ...           ...             ...             ...    ..
.
1080         False         False           False           False
False
1081         False         False           False           False
False
1082         False         False           False           False
False
1083         False         False           False           False
False
1084         False         False           False           False
False

       2002   2003   2004   2005   2006  ...   2013   2014   2015
2016  \
0     False  False  False  False  False  ...  False  False  False
False
1     False  False  False  False  False  ...  False  False  False
False
2     False  False  False  False  False  ...  False  False  False
False
3     False  False  False  False  False  ...  False  False  False
False
```

```
4     False  False  False  False  False  ...  False  False  False
False
...     ...    ...    ...    ...    ...  ...    ...    ...    ...    .
..
1080  False  False  False  False  False  ...  False  False  False
False
1081  False  False  False  False  False  ...  False  False  False
False
1082  False  False  False  False  False  ...  False  False  False
False
1083  False  False  False  False  False  ...  False  False  False
False
1084  False  False  False  False  False  ...  False  False  False
False

       2017   2018   2019   2020   2021   2022
0     False  False  False  False  False  False
1     False  False  False  False  False  False
2     False  False  False  False  False  False
3     False  False  False  False  False  False
4     False  False  False  False  False  False
...     ...    ...    ...    ...    ...    ...
1080  False  False  False  False  False  False
1081  False  False  False  False  False  False
1082  False  False  False  False  False  False
1083  False  False  False  False  False  False
1084  False  False  False  False  False  False

[1085 rows x 26 columns]
```

```
pop.isnull().sum()
```

```
Country Name      0
Country Code      0
Indicator Name    0
Indicator Code    0
2001              0
2002              0
2003              0
2004              0
2005              0
2006              0
2007              0
2008              0
2009              0
2010              0
2011              0
2012              0
2013              0
2014              0
```

```
2015               0
2016               0
2017               0
2018               0
2019               0
2020               0
2021               0
2022               0
dtype: int64
```

| Data Cleaning

Drop unuseful columns

```
# drop Indicator Name
pop.drop('Indicator Name' , inplace = True , axis = 1)

#drop Country Code
pop.drop('Country Code' , inplace = True , axis = 1)

pop
```

```
                Country Name     Indicator Code          2001
2002  \
0                Afghanistan        SP.POP.TOTL  1.968863e+07
2.100026e+07
1                    Albania        SP.POP.TOTL  3.060173e+06
3.051010e+06
2                    Algeria        SP.POP.TOTL  3.120098e+07
3.162470e+07
3             American Samoa        SP.POP.TOTL  5.832400e+04
5.817700e+04
4                    Andorra        SP.POP.TOTL  6.782000e+04
7.084900e+04
...                      ...                ...           ...
...
1080  Virgin Islands (U.S.)  SP.POP.TOTL.FE.ZS  5.227487e+01
5.224600e+01
1081     West Bank and Gaza  SP.POP.TOTL.FE.ZS  4.967837e+01
4.975177e+01
1082            Yemen, Rep.  SP.POP.TOTL.FE.ZS  4.956276e+01
4.954006e+01
1083                 Zambia  SP.POP.TOTL.FE.ZS  5.177003e+01
5.168635e+01
1084               Zimbabwe  SP.POP.TOTL.FE.ZS  5.253953e+01
5.257157e+01

              2003          2004          2005          2006
```

```
2007  \
0     2.264513e+07  2.355355e+07  2.441119e+07  2.544294e+07
2.590330e+07
1     3.039616e+06  3.026939e+06  3.011487e+06  2.992547e+06
2.970017e+06
2     3.205588e+07  3.251019e+07  3.295669e+07  3.343508e+07
3.398383e+07
3     5.794100e+04  5.762600e+04  5.725400e+04  5.683700e+04
5.638300e+04
4     7.390700e+04  7.693300e+04  7.982600e+04  8.022100e+04
7.816800e+04
...            ...           ...           ...           ...
...
1080  5.221180e+01  5.217579e+01  5.214733e+01  5.212930e+01
5.212146e+01
1081  4.983246e+01  4.991005e+01  4.997135e+01  5.001668e+01
5.005240e+01
1082  4.951833e+01  4.949728e+01  4.947748e+01  4.946098e+01
4.944637e+01
1083  5.160637e+01  5.152310e+01  5.142859e+01  5.132306e+01
5.121521e+01
1084  5.261238e+01  5.267591e+01  5.276857e+01  5.280904e+01
5.283357e+01

              2008  ...          2013          2014          2015  \
0     2.642720e+07  ...  3.154121e+07  3.271621e+07  3.375350e+07
1     2.947314e+06  ...  2.895092e+06  2.889104e+06  2.880703e+06
2     3.456959e+07  ...  3.800063e+07  3.876017e+07  3.954315e+07
3     5.589100e+04  ...  5.299500e+04  5.221700e+04  5.136800e+04
4     7.605500e+04  ...  7.136700e+04  7.162100e+04  7.174600e+04
...            ...  ...           ...           ...           ...
1080  5.212994e+01  ...  5.230641e+01  5.237031e+01  5.245859e+01
1081  5.007858e+01  ...  5.018161e+01  5.020307e+01  5.021980e+01
1082  4.943113e+01  ...  4.937444e+01  4.936489e+01  4.936569e+01
1083  5.111155e+01  ...  5.082609e+01  5.079119e+01  5.076178e+01
1084  5.289394e+01  ...  5.305832e+01  5.302871e+01  5.299989e+01

              2016          2017          2018          2019
2020  \
0     3.463621e+07  3.564342e+07  3.668678e+07  3.776950e+07
3.897223e+07
1     2.876101e+06  2.873457e+06  2.866376e+06  2.854191e+06
2.837849e+06
2     4.033933e+07  4.113655e+07  4.192701e+07  4.270537e+07
4.345167e+07
3     5.044800e+04  4.946300e+04  4.842400e+04  4.732100e+04
4.618900e+04
4     7.254000e+04  7.383700e+04  7.501300e+04  7.634300e+04
7.770000e+04
```

```
...            ...           ...           ...           ...
...
1080  5.256558e+01  5.268579e+01  5.281409e+01  5.294269e+01
5.308636e+01
1081  5.022528e+01  5.021401e+01  5.018863e+01  5.016446e+01
5.014104e+01
1082  4.937435e+01  4.938303e+01  4.940339e+01  4.942868e+01
4.944568e+01
1083  5.073599e+01  5.071160e+01  5.069091e+01  5.067376e+01
5.066170e+01
1084  5.297311e+01  5.294839e+01  5.292376e+01  5.290020e+01
5.286933e+01

                2021          2022
0     4.009946e+07  4.112877e+07
1     2.811666e+06  2.775634e+06
2     4.417797e+07  4.490322e+07
3     4.503500e+04  4.427300e+04
4     7.903400e+04  7.982400e+04
...            ...           ...
1080  5.323556e+01  5.338561e+01
1081  5.012218e+01  5.010634e+01
1082  4.946149e+01  4.948097e+01
1083  5.065505e+01  5.065540e+01
1084  5.283285e+01  5.278586e+01

[1085 rows x 24 columns]
```

| Data Visualization

Extracted top ten countries of total population

```
total_pop=pop[pop['Indicator Code'] == 'SP.POP.TOTL' ]

# Sort data based on the total population for 2022
total_pop_sort=total_pop.sort_values(by='2022' , ascending = False)

# Get the top ten countries of total population for 2022
total_pop_top=total_pop_sort.head(10)
total_pop_top
```

```
           Country Name Indicator Code          2001          2002  \
89                India    SP.POP.TOTL  1.078971e+09  1.098313e+09
41                China    SP.POP.TOTL  1.271850e+09  1.280400e+09
206       United States    SP.POP.TOTL  2.849690e+08  2.876252e+08
90            Indonesia    SP.POP.TOTL  2.171124e+08  2.201151e+08
149            Pakistan    SP.POP.TOTL  1.592177e+08  1.632628e+08
144             Nigeria    SP.POP.TOTL  1.261527e+08  1.295830e+08
```

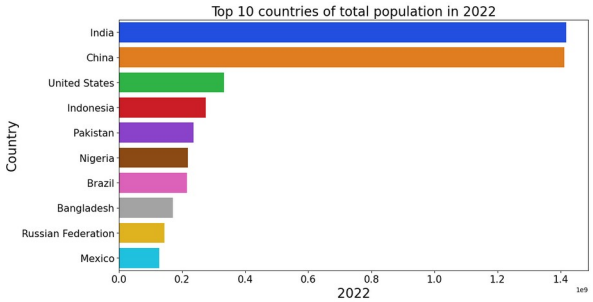
```
26                Brazil    SP.POP.TOTL  1.782119e+08  1.804767e+08
15            Bangladesh    SP.POP.TOTL  1.316705e+08  1.341398e+08
161  Russian Federation    SP.POP.TOTL  1.459765e+08  1.453065e+08
127               Mexico    SP.POP.TOTL  9.939429e+07  1.009171e+08

              2003          2004          2005          2006
2007  \
89   1.117415e+09  1.136265e+09  1.154639e+09  1.172374e+09
1.189692e+09
41   1.288400e+09  1.296075e+09  1.303720e+09  1.311020e+09
1.317885e+09
206  2.901079e+08  2.928053e+08  2.955166e+08  2.983799e+08
3.012312e+08
90   2.230801e+08  2.259386e+08  2.288051e+08  2.317974e+08
2.348583e+08
149  1.668767e+08  1.706486e+08  1.743721e+08  1.780700e+08
1.819245e+08
144  1.331198e+08  1.367568e+08  1.404907e+08  1.443298e+08
1.482940e+08
26   1.826293e+08  1.847220e+08  1.867973e+08  1.888207e+08
1.907795e+08
15   1.365032e+08  1.387897e+08  1.409126e+08  1.426288e+08
1.441359e+08
161  1.446486e+08  1.440673e+08  1.435188e+08  1.430496e+08
1.428051e+08
127  1.024293e+08  1.039458e+08  1.054424e+08  1.068868e+08
1.083030e+08

              2008  ...          2013          2014          2015  \
89   1.206735e+09  ...  1.291132e+09  1.307247e+09  1.322867e+09
41   1.324655e+09  ...  1.363240e+09  1.371860e+09  1.379860e+09
206  3.040940e+08  ...  3.160599e+08  3.183863e+08  3.207390e+08
90   2.379365e+08  ...  2.532759e+08  2.562298e+08  2.590920e+08
149  1.859320e+08  ...  2.053376e+08  2.082516e+08  2.109693e+08
144  1.523825e+08  ...  1.747261e+08  1.793790e+08  1.839958e+08
26   1.926723e+08  ...  2.017218e+08  2.034596e+08  2.051882e+08
15   1.454213e+08  ...  1.540301e+08  1.559613e+08  1.578300e+08
161  1.427424e+08  ...  1.435070e+08  1.438197e+08  1.440969e+08
127  1.096845e+08  ...  1.172907e+08  1.187559e+08  1.201499e+08

              2016          2017          2018          2019
2020  \
89   1.338636e+09  1.354196e+09  1.369003e+09  1.383112e+09
1.396387e+09
41   1.387790e+09  1.396215e+09  1.402760e+09  1.407745e+09
1.411100e+09
206  3.230718e+08  3.251221e+08  3.268382e+08  3.283300e+08
3.315115e+08
90   2.618502e+08  2.644989e+08  2.670668e+08  2.695829e+08
2.718580e+08
```

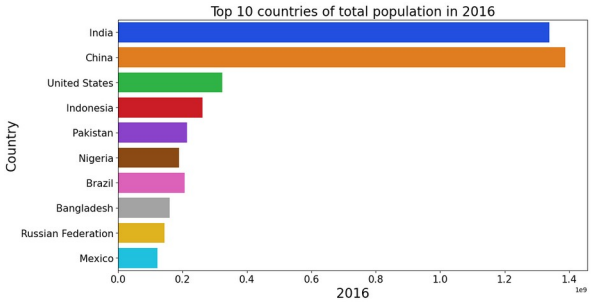
```
149  2.135248e+08  2.163797e+08  2.197315e+08  2.232933e+08
2.271967e+08
144  1.886669e+08  1.934959e+08  1.983876e+08  2.033045e+08
2.083274e+08
26   2.068596e+08  2.085050e+08  2.101666e+08  2.117829e+08
2.131963e+08
15   1.597846e+08  1.617940e+08  1.636840e+08  1.655162e+08
1.674210e+08
161  1.443424e+08  1.444967e+08  1.444779e+08  1.444063e+08
1.440731e+08
127  1.215192e+08  1.228393e+08  1.240139e+08  1.250853e+08
1.259983e+08

              2021          2022
89   1.407564e+09  1.417173e+09
41   1.412360e+09  1.412175e+09
206  3.320316e+08  3.332876e+08
90   2.737532e+08  2.755013e+08
149  2.314021e+08  2.358249e+08
144  2.134013e+08  2.185412e+08
26   2.143262e+08  2.153135e+08
15   1.693563e+08  1.711864e+08
161  1.434493e+08  1.435557e+08
127  1.267051e+08  1.275041e+08

[10 rows x 24 columns]
```

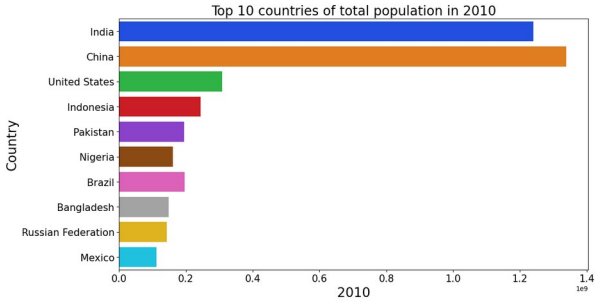
Top ten countries of total population in year 2022, 2016, 2010 and 2001

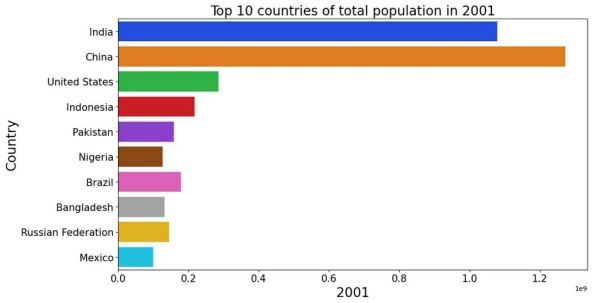
```
plt.figure(figsize=(30,16))

# set the spacing between subplots
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#bar plot for year 2022
plt.subplot(2,2,1)
plt.title ('Top 10 countries of total population in 2022' , size= 20)
sns.barplot(x='2022' , y='Country Name' , data=total_pop_top , palette
= 'bright')
plt.xlabel('2022' , size=20)
plt.ylabel('Country' , size=20)
plt.xticks(size=15)
plt.yticks(size=15)
```

```
#bar plot for year 2016
plt.subplot(2,2,2)
plt.title ('Top 10 countries of total population in 2016' , size= 20)
sns.barplot(x='2016' , y='Country Name' , data=total_pop_top , palette
= 'bright')
plt.xlabel('2016' , size=20)
plt.ylabel('Country' , size=20)
plt.xticks(size=15)
plt.yticks(size=15)

#bar plot for year 2010
plt.subplot(2,2,3)
plt.title ('Top 10 countries of total population in 2010' , size= 20)
sns.barplot(x='2010' , y='Country Name' , data=total_pop_top , palette
= 'bright')
plt.xlabel('2010' , size=20)
plt.ylabel('Country' , size=20)
plt.xticks(size=15)
plt.yticks(size=15)

#bar plot for year 2001
plt.subplot(2,2,4)
plt.title ('Top 10 countries of total population in 2001' , size= 20)
sns.barplot(x='2001' , y='Country Name' , data=total_pop_top , palette
= 'bright')
plt.xlabel('2001' , size=20)
plt.ylabel('Country' , size=20)
plt.xticks(size=15)
plt.yticks(size=15)

plt.show()
```









Extracted bottom ten countries of total population

```
# Sort data based on the total population for 2022
total_pop_sort1=total_pop.sort_values(by='2022' , ascending=True)

# Get the bottom ten countries of total population for 2022
total_pop_bottom=total_pop_sort1.head(10)

total_pop_bottom
```

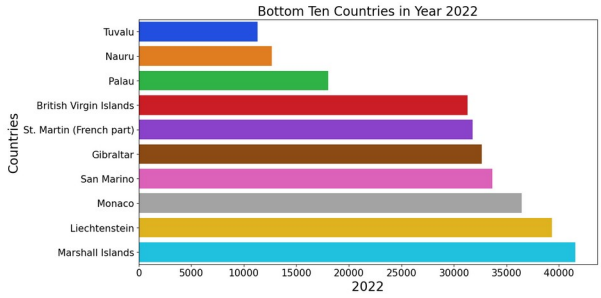
```
                  Country Name Indicator Code     2001     2002
2003  \
201                    Tuvalu    SP.POP.TOTL   9621.0   9609.0
9668.0
137                     Nauru    SP.POP.TOTL  10363.0  10351.0
10344.0
150                     Palau    SP.POP.TOTL  19828.0  19851.0
19880.0
27     British Virgin Islands    SP.POP.TOTL  20657.0  21288.0
21982.0
183  St. Martin (French part)    SP.POP.TOTL  30387.0  31160.0
31929.0
75                   Gibraltar    SP.POP.TOTL  27721.0  27892.0
28301.0
164                San Marino    SP.POP.TOTL  27335.0  27969.0
28601.0
130                    Monaco    SP.POP.TOTL  32444.0  32386.0
32316.0
114             Liechtenstein    SP.POP.TOTL  33376.0  33693.0
34000.0
```

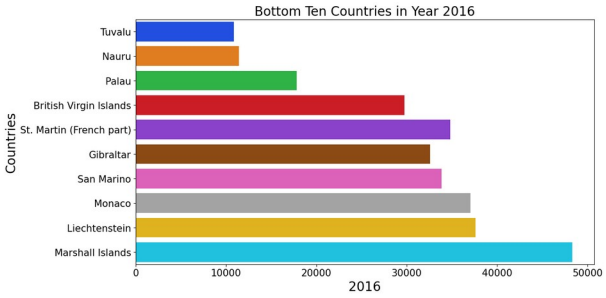
```
124          Marshall Islands    SP.POP.TOTL  54413.0  54496.0
54493.0

        2004     2005     2006     2007     2008  ...     2013
2014  \
201   9791.0   9912.0  10030.0  10149.0  10272.0  ...  10918.0
10899.0
137  10335.0  10318.0  10294.0  10267.0  10243.0  ...  10694.0
10940.0
150  19907.0  19831.0  19619.0  19366.0  19102.0  ...  17805.0
17796.0
27   22715.0  23497.0  24323.0  25191.0  26115.0  ...  28657.0
28971.0
183  32697.0  33452.0  34183.0  34887.0  35541.0  ...  35639.0
35261.0
75   28716.0  29155.0  29587.0  29996.0  30398.0  ...  32411.0
32452.0
164  29093.0  29508.0  29959.0  30372.0  30700.0  ...  33285.0
33389.0
130  32236.0  32141.0  32011.0  31823.0  31862.0  ...  35425.0
36110.0
114  34300.0  34603.0  34889.0  35150.0  35401.0  ...  36806.0
37096.0
124  54435.0  54337.0  54208.0  54038.0  53816.0  ...  51352.0
50419.0

        2015     2016     2017     2018     2019     2020     2021
2022
201  10877.0  10852.0  10828.0  10865.0  10956.0  11069.0  11204.0
11312.0
137  11185.0  11437.0  11682.0  11924.0  12132.0  12315.0  12511.0
12668.0
150  17794.0  17816.0  17837.0  17864.0  17916.0  17972.0  18024.0
18055.0
27   29366.0  29739.0  30060.0  30335.0  30610.0  30910.0  31122.0
31305.0
183  35020.0  34811.0  34496.0  33852.0  33121.0  32553.0  31948.0
31791.0
75   32520.0  32565.0  32602.0  32648.0  32685.0  32709.0  32669.0
32649.0
164  33570.0  33834.0  34056.0  34156.0  34178.0  34007.0  33745.0
33660.0
130  36760.0  37071.0  37044.0  37029.0  37034.0  36922.0  36686.0
36469.0
114  37355.0  37609.0  37889.0  38181.0  38482.0  38756.0  39039.0
39327.0
124  49410.0  48329.0  47187.0  45989.0  44728.0  43413.0  42050.0
41569.0

[10 rows x 24 columns]
```

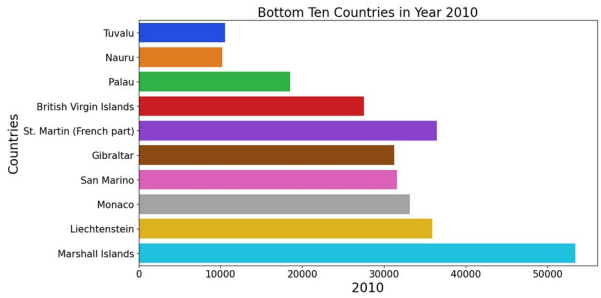
Bottom ten countries of total population in year 2022, 2016, 2010 and 2001

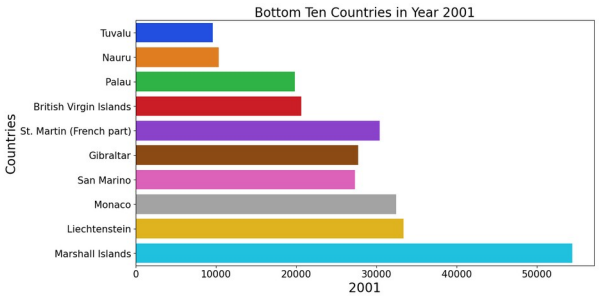
```
plt.figure(figsize=(30,16))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#barplot for year 2022
plt.subplot(2,2,1)
plt.title('Bottom Ten Countries in Year 2022' , size=20)
sns.barplot(x='2022' , y='Country Name' , data=total_pop_bottom ,
palette='bright')
plt.xlabel('2022' , size=20)
plt.ylabel('Countries' , size=20)
plt.xticks(size=15)
plt.yticks(size=15)

#bar plot for year 2016
plt.subplot(2,2,2)
plt.title('Bottom Ten Countries in Year 2016' , size=20)
sns.barplot(x='2016' , y='Country Name' , data=total_pop_bottom ,
palette='bright')
plt.xlabel('2016' , size=20)
plt.ylabel('Countries' , size=20)
plt.xticks(size=15)
plt.yticks(size=15)

#bar plot for year 2010
plt.subplot(2,2,3)
plt.title('Bottom Ten Countries in Year 2010' , size=20)
sns.barplot(x='2010' , y='Country Name' , data=total_pop_bottom ,
palette='bright')
plt.xlabel('2010' , size=20)
plt.ylabel('Countries' , size=20)
plt.xticks(size=15)
plt.yticks(size=15)

#bar plot for year 2001
plt.subplot(2,2,4)
plt.title('Bottom Ten Countries in Year 2001' , size=20)
sns.barplot(x='2001' , y='Country Name' , data=total_pop_bottom ,
palette='bright')
plt.xlabel('2001' , size=20)
plt.ylabel('Countries' , size=20)
plt.xticks(size=15)
```

```
plt.yticks(size=15)

plt.show()
```









Extracted top ten countries with highest male population

```
# Filter data for male population
male_pop=pop[pop['Indicator Code']=='SP.POP.TOTL.MA.IN']

# Sort data based on the male population for 2022
male_pop_sort=male_pop.sort_values(by='2022' , ascending=False)

# Get the top ten countries with the highest male population for 2022
male_pop_top=male_pop_sort.head(10)
male_pop_top
```

	Country Name	Indicator Code	2001	2002
306	India	SP.POP.TOTL.MA.IN	558291332.0	568334873.0
258	China	SP.POP.TOTL.MA.IN	650413443.0	654865007.0
423	United States	SP.POP.TOTL.MA.IN	140343133.0	141652391.0
307	Indonesia	SP.POP.TOTL.MA.IN	109210886.0	110738346.0
366	Pakistan	SP.POP.TOTL.MA.IN	82212668.0	84278393.0
361	Nigeria	SP.POP.TOTL.MA.IN	63420738.0	65158785.0
243	Brazil	SP.POP.TOTL.MA.IN	88233218.0	89303580.0

```
232          Bangladesh  SP.POP.TOTL.MA.IN   67083138.0   68254669.0

378  Russian Federation  SP.POP.TOTL.MA.IN   68107925.0   67715029.0

344              Mexico  SP.POP.TOTL.MA.IN   48635540.0   49386357.0


             2003         2004         2005         2006
2007  \
306  578236241.0  587990365.0  597477666.0  606611392.0  615506279.0

258  659030348.0  663027988.0  667008138.0  670816557.0  674398683.0

423  142865707.0  144210567.0  145570277.0  146996229.0  148402076.0

307  112245542.0  113702084.0  115167468.0  116685330.0  118236404.0

366   86127265.0   88049526.0   89942008.0   91810143.0   93744001.0

361   66946860.0   68785095.0   70670683.0   72611203.0   74620905.0

243   90318606.0   91303580.0   92281701.0   93237364.0   94163019.0

232   69348344.0   70392333.0   71337878.0   72029553.0   72599534.0

378   67309072.0   66921101.0   66542026.0   66219710.0   66050853.0

344   50132595.0   50881240.0   51619299.0   52329698.0   53024314.0


             2008  ...          2013         2014         2015
2016  \
306  624242020.0  ...  667322883.0  675549357.0  683543213.0
691623419.0
258  677925783.0  ...  697792609.0  702159650.0  706169297.0
710100087.0
423  149804127.0  ...  156025758.0  157301571.0  158580581.0
159847727.0
307  119801561.0  ...  127582414.0  129071050.0  130517327.0
131909809.0
366   95745628.0  ...  105378643.0  106815000.0  107983708.0
108894512.0
361   76699005.0  ...   88080932.0   90449577.0   92803434.0
95191980.0
243   95059746.0  ...   99355387.0  100185186.0  101008689.0
101794390.0
232   73036822.0  ...   76786999.0   77673568.0   78535803.0
79459393.0
378   65997139.0  ...   66481170.0   66665787.0   66823446.0
66964302.0
```

```
344   53699298.0  ...   57427865.0   58145362.0   58824776.0
59489629.0

             2017          2018          2019          2020
2021  \
306  699587889.0  707149230.0  714325057.0  720997448.0  726503429.0

258  714208198.0  717291023.0  719565010.0  720928153.0  721140373.0

423  160970309.0  161911851.0  162730147.0  164308503.0  164481553.0

307  133245399.0  134536680.0  135798442.0  136927582.0  137852478.0

366  110003086.0  111438323.0  113015042.0  114815641.0  116815852.0

361   97662955.0  100165119.0  102680839.0  105243174.0  107827012.0

243  102567011.0  103354449.0  104119798.0  104779288.0  105291292.0

232   80422431.0   81314565.0   82164179.0   83063714.0   83998088.0

378   67064796.0   67084512.0   67076532.0   66925854.0   66624709.0

344   60126616.0   60685164.0   61187228.0   61587451.0   61856137.0


             2022
306  731180498.0
258  720646499.0
423  165021339.0
307  138703277.0
366  118960880.0
361  110448136.0
243  105733027.0
232   84859213.0
378   66670833.0
344   62194954.0

[10 rows x 24 columns]
```

Extracted top ten countries with highest female population

```
# Filter data for female population
female_pop=pop[pop['Indicator Code'] == 'SP.POP.TOTL.FE.IN']

# Sort data based on the female population for 2022
female_pop_sort=female_pop.sort_values(by='2022' , ascending=False)

# Get the top ten countries with the highest female population for
2022
```

```
female_pop_top=female_pop_sort.head(10)
female_pop_top
```

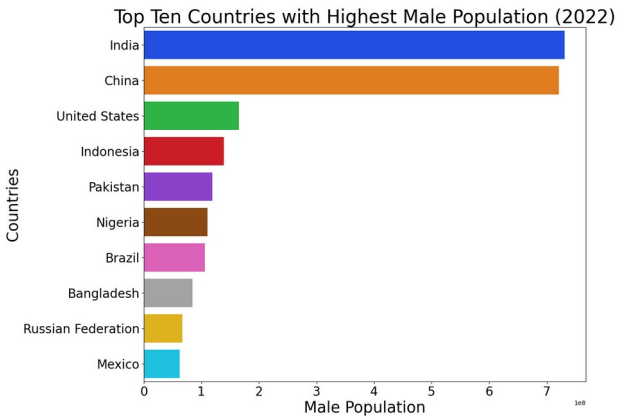
```
           Country Name     Indicator Code         2001
2002  \
475               China  SP.POP.TOTL.FE.IN  621436557.0  625534993.0

523               India  SP.POP.TOTL.FE.IN  520679574.0  529978166.0

640       United States  SP.POP.TOTL.FE.IN  144625822.0  145972802.0

524           Indonesia  SP.POP.TOTL.FE.IN  107901551.0  109376745.0

583            Pakistan  SP.POP.TOTL.FE.IN   77005059.0   78984415.0

460              Brazil  SP.POP.TOTL.FE.IN   89978663.0   91173105.0

578             Nigeria  SP.POP.TOTL.FE.IN   62731941.0   64424240.0

449          Bangladesh  SP.POP.TOTL.FE.IN   64587346.0   65885157.0

595  Russian Federation  SP.POP.TOTL.FE.IN   77868557.0   77591468.0

561              Mexico  SP.POP.TOTL.FE.IN   50758748.0   51530724.0


            2003         2004         2005         2006
2007  \
475  629369651.0  633047012.0  636711861.0  640203444.0  643486317.0

523  539178882.0  548274218.0  557161047.0  565762395.0  574185530.0

640  147242226.0  148594732.0  149946323.0  151383683.0  152829130.0

524  110834579.0  112236510.0  113637675.0  115112096.0  116621886.0

583   80749416.0   82599094.0   84430090.0   86259841.0   88180519.0

460   92310671.0   93418462.0   94515633.0   95583318.0   96616434.0

578   66172940.0   67971753.0   69820038.0   71718561.0   73673124.0

449   67154861.0   68397392.0   69574712.0   70599279.0   71536401.0

595   77339545.0   77146216.0   76976788.0   76829928.0   76754261.0

561   52296746.0   53064573.0   53823103.0   54557092.0   55278659.0


            2008  ...         2013         2014         2015
2016  \
475  646729218.0  ...  665447390.0  669700351.0  673690703.0
```

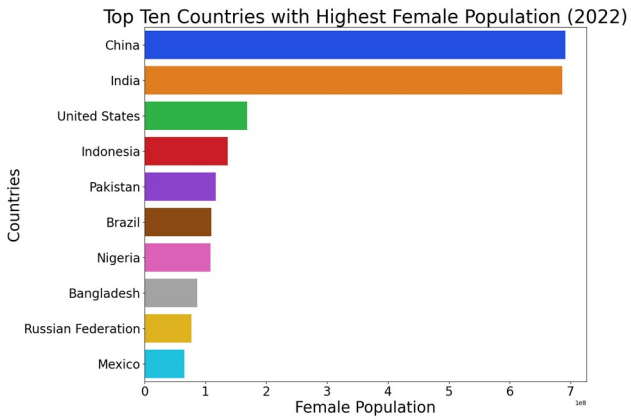
```
677689913.0
523  582492785.0  ...  623809180.0  631697152.0  639323292.0
647012921.0
640  154289840.0  ...  160034189.0  161084758.0  162158414.0
163224028.0
524  118134983.0  ...  125693504.0  127158711.0  128574643.0
129940374.0
583   90186327.0  ...   99958919.0  101436628.0  102985590.0
104630327.0
460   97612571.0  ...  102366379.0  103274465.0  104179515.0
105065188.0
578   75683500.0  ...   86645192.0   88929439.0   91192351.0
93474951.0
449   72384496.0  ...   77243140.0   78287731.0   79294197.0
80325176.0
595   76745227.0  ...   77025825.0   77153880.0   77273424.0
77378095.0
561   55985191.0  ...   59862821.0   60610526.0   61325120.0
62029592.0

            2017         2018         2019         2020
2021  \
475  682006802.0  685468978.0  688179990.0  690171848.0  691219627.0

523  654607791.0  661854076.0  668786993.0  675389679.0  681060412.0

640  164151818.0  164926348.0  165599805.0  167203010.0  167550001.0

524  131253454.0  132530163.0  133784436.0  134930389.0  135900714.0

583  106376569.0  108293156.0  110278237.0  112381099.0  114586264.0

460  105937948.0  106812144.0  107663080.0  108417015.0  109034931.0

578   95832952.0   98222504.0  100623652.0  103084231.0  105574310.0

449   81371533.0   82369393.0   83352043.0   84357236.0   85358163.0

595   77431943.0   77393346.0   77329730.0   77147284.0   76824577.0

561   62712641.0   63328698.0   63898082.0   64410851.0   64849001.0


            2022
475  691528501.0
523  685992675.0
640  168266219.0
524  136798063.0
583  116863982.0
460  109580471.0
```

```
578  108093075.0
449   86327159.0
595   76884903.0
561   65309171.0

[10 rows x 24 columns]
```

Top ten countries with highest male and female population in 2022

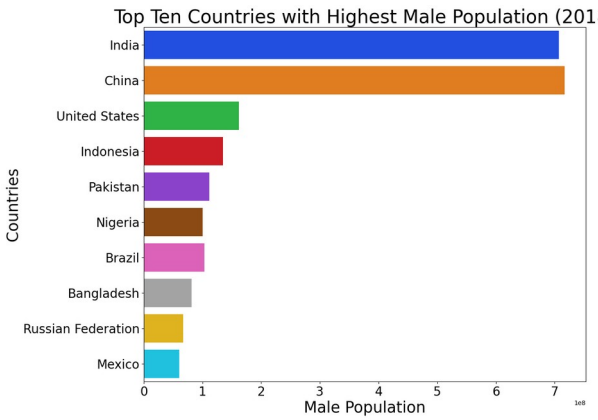
```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Highest Male Population (2022)' ,
size = 30)
sns.barplot(x='2022' , y='Country Name' , data=male_pop_top ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Highest Female Population (2022)' ,
size = 30)
sns.barplot(x='2022' , y='Country Name' , data=female_pop_top ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```

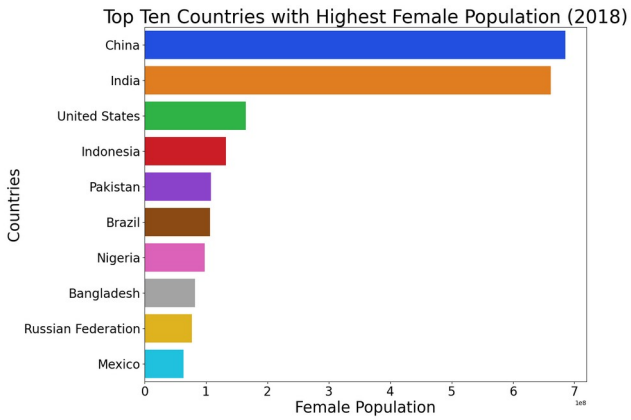




Top ten countries with highest male and female population in 2018

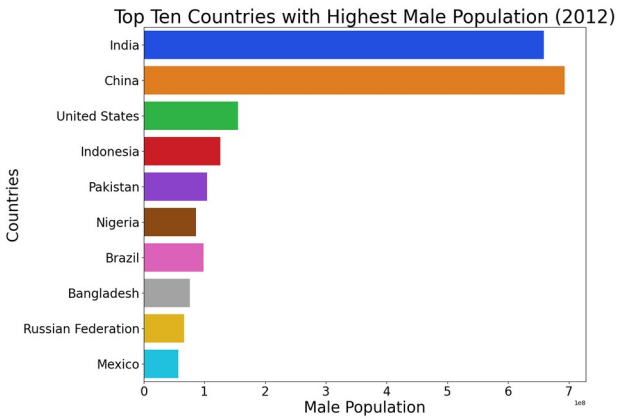
```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Highest Male Population (2018)' ,
size = 30)
sns.barplot(x='2018' , y='Country Name' , data=male_pop_top ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Highest Female Population (2018)' ,
size = 30)
sns.barplot(x='2018' , y='Country Name' , data=female_pop_top ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```

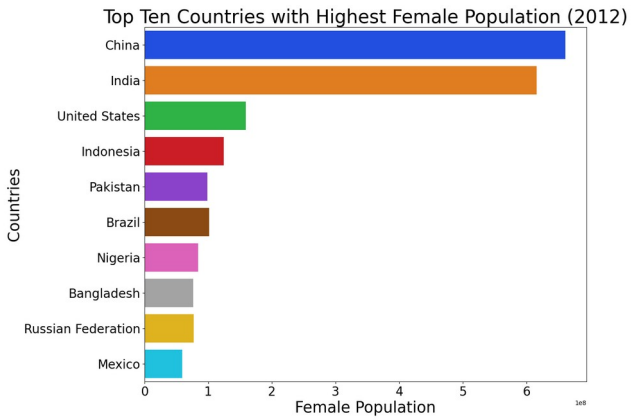




Top ten countries with highest male and female population in 2012

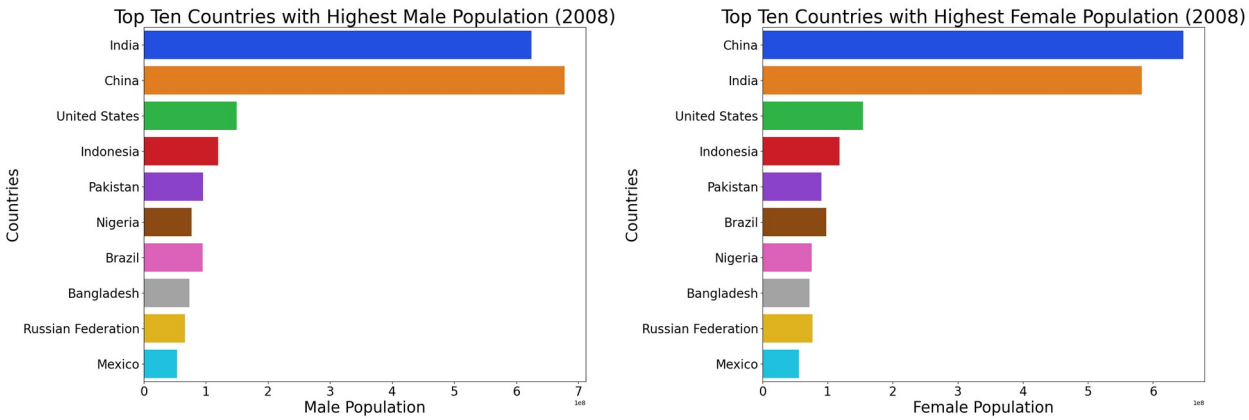
```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Highest Male Population (2012)' ,
size = 30)
sns.barplot(x='2012' , y='Country Name' , data=male_pop_top ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Highest Female Population (2012)' ,
size = 30)
sns.barplot(x='2012' , y='Country Name' , data=female_pop_top ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```





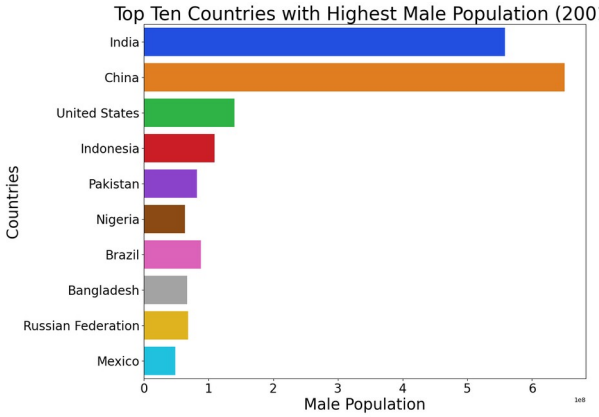
Top ten countries with highest male and female population in 2008

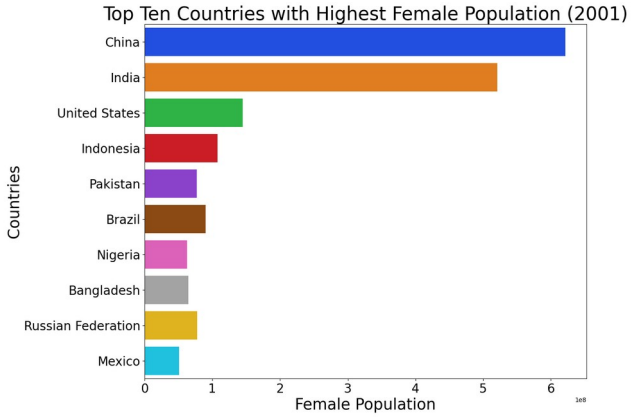
```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Highest Male Population (2008)' ,
size = 30)
sns.barplot(x='2008' , y='Country Name' , data=male_pop_top ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Highest Female Population (2008)' ,
size = 30)
sns.barplot(x='2008' , y='Country Name' , data=female_pop_top ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```



Top ten countries with highest male and female population in 2001

```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Highest Male Population (2001)' ,
size = 30)
sns.barplot(x='2001' , y='Country Name' , data=male_pop_top ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Highest Female Population (2001)' ,
size = 30)
sns.barplot(x='2001' , y='Country Name' , data=female_pop_top ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```





Extracted top ten countries with lowest male population

```
# Sort data based on the male population for 2022
male_pop_sort1=male_pop.sort_values(by='2022' , ascending=True)

# Get the top ten countries with the lowest male population for 2022
male_pop_bottom=male_pop_sort1.head(10)
male_pop_bottom
```

```
                  Country Name     Indicator Code     2001     2002
2003  \
418                     Tuvalu  SP.POP.TOTL.MA.IN   4777.0   4787.0
4833.0
354                      Nauru  SP.POP.TOTL.MA.IN   5349.0   5340.0
5329.0
367                      Palau  SP.POP.TOTL.MA.IN  10804.0  10784.0
10767.0
244    British Virgin Islands  SP.POP.TOTL.MA.IN  10588.0  10851.0
11133.0
400  St. Martin (French part)  SP.POP.TOTL.MA.IN  14777.0  15104.0
15426.0
292                  Gibraltar  SP.POP.TOTL.MA.IN  13790.0  13863.0
14081.0
381                San Marino  SP.POP.TOTL.MA.IN  13378.0  13687.0
13998.0
347                     Monaco  SP.POP.TOTL.MA.IN  15791.0  15768.0
15741.0
331              Liechtenstein  SP.POP.TOTL.MA.IN  16424.0  16583.0
16743.0
341          Marshall Islands  SP.POP.TOTL.MA.IN  27906.0  27945.0
27939.0

        2004     2005     2006     2007     2008  ...     2013
2014  \
418   4914.0   4991.0   5066.0   5143.0   5227.0  ...   5638.0
5627.0
354   5316.0   5298.0   5272.0   5247.0   5228.0  ...   5457.0
```

```
5580.0
367  10744.0  10666.0  10523.0  10358.0  10190.0  ...   9389.0
9443.0
244  11439.0  11774.0  12133.0  12512.0  12918.0  ...  14015.0
14145.0
400  15749.0  16063.0  16358.0  16645.0  16911.0  ...  16916.0
16759.0
292  14300.0  14527.0  14749.0  14954.0  15158.0  ...  16192.0
16201.0
381  14246.0  14460.0  14694.0  14899.0  15052.0  ...  16186.0
16241.0
347  15705.0  15662.0  15604.0  15518.0  15542.0  ...  17370.0
17716.0
331  16901.0  17052.0  17197.0  17335.0  17473.0  ...  18220.0
18378.0
341  27902.0  27843.0  27769.0  27678.0  27555.0  ...  26308.0
25823.0

        2015     2016     2017     2018     2019     2020     2021
2022
418   5617.0   5609.0   5598.0   5613.0   5654.0   5702.0   5755.0
5799.0
354   5706.0   5832.0   5953.0   6074.0   6177.0   6266.0   6361.0
6435.0
367   9454.0   9431.0   9409.0   9389.0   9379.0   9377.0   9380.0
9376.0
244  14303.0  14453.0  14578.0  14681.0  14786.0  14900.0  14976.0
15062.0
400  16659.0  16563.0  16412.0  16100.0  15749.0  15477.0  15188.0
15111.0
292  16223.0  16244.0  16268.0  16297.0  16320.0  16337.0  16317.0
16308.0
381  16328.0  16453.0  16564.0  16626.0  16650.0  16563.0  16419.0
16380.0
347  18043.0  18187.0  18159.0  18142.0  18145.0  18095.0  17982.0
17872.0
331  18521.0  18663.0  18816.0  18961.0  19102.0  19223.0  19354.0
19502.0
341  25299.0  24738.0  24146.0  23529.0  22874.0  22190.0  21483.0
21223.0

[10 rows x 24 columns]
```

Extracted top ten countries with lowest female population

```
# Sort data based on the female population for 2022
female_pop_sort1=female_pop.sort_values(by='2022' , ascending=True )

# Get the top ten countries with the lowest female population for 2022
```

```
female_pop_bottom=female_pop_sort1.head(10)
female_pop_bottom
```

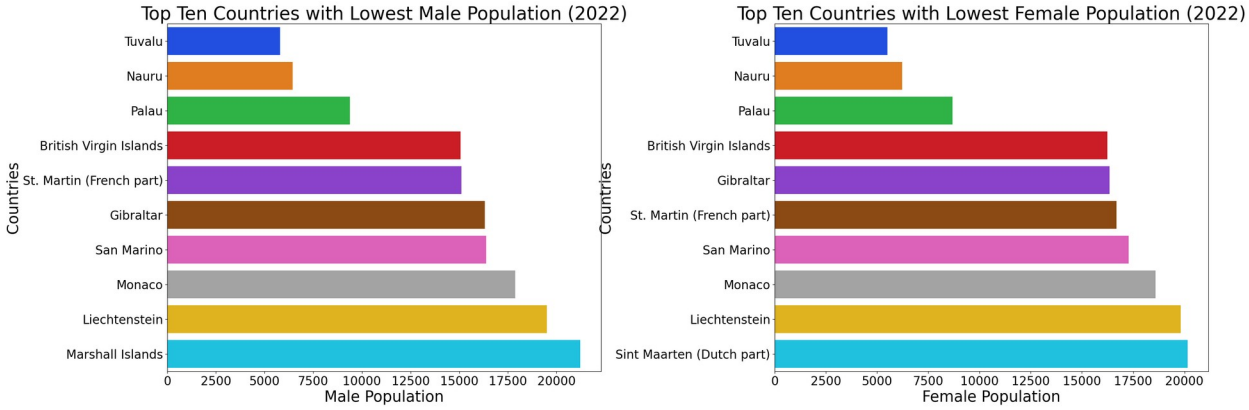
```
                  Country Name     Indicator Code     2001     2002
2003  \
635                     Tuvalu  SP.POP.TOTL.FE.IN   4845.0   4822.0
4835.0
571                      Nauru  SP.POP.TOTL.FE.IN   5013.0   5011.0
5016.0
584                      Palau  SP.POP.TOTL.FE.IN   9024.0   9066.0
9113.0
461     British Virgin Islands  SP.POP.TOTL.FE.IN  10069.0  10437.0
10849.0
509                  Gibraltar  SP.POP.TOTL.FE.IN  13931.0  14030.0
14220.0
617   St. Martin (French part)  SP.POP.TOTL.FE.IN  15610.0  16057.0
16503.0
598                  San Marino  SP.POP.TOTL.FE.IN  13957.0  14283.0
14603.0
564                      Monaco  SP.POP.TOTL.FE.IN  16652.0  16617.0
16576.0
548               Liechtenstein  SP.POP.TOTL.FE.IN  16951.0  17110.0
17257.0
606  Sint Maarten (Dutch part)  SP.POP.TOTL.FE.IN  15692.0  15814.0
16209.0

        2004     2005     2006     2007     2008  ...     2013
2014  \
635   4878.0   4922.0   4965.0   5006.0   5045.0  ...   5280.0
5272.0
571   5019.0   5020.0   5022.0   5019.0   5016.0  ...   5237.0
5360.0
584   9164.0   9165.0   9095.0   9008.0   8912.0  ...   8416.0
8353.0
461  11277.0  11724.0  12190.0  12679.0  13197.0  ...  14641.0
14826.0
509  14416.0  14628.0  14838.0  15043.0  15241.0  ...  16218.0
16250.0
617  16948.0  17390.0  17825.0  18241.0  18631.0  ...  18724.0
18501.0
598  14847.0  15049.0  15264.0  15473.0  15648.0  ...  17098.0
17148.0
564  16532.0  16479.0  16407.0  16305.0  16320.0  ...  18055.0
18393.0
548  17399.0  17552.0  17693.0  17814.0  17927.0  ...  18585.0
18719.0
606  16777.0  17097.0  17373.0  17620.0  17758.0  ...  17555.0
17951.0

        2015     2016     2017     2018     2019     2020     2021
```

```
2022
635   5261.0   5244.0   5230.0   5252.0   5301.0   5367.0   5449.0
5513.0
571   5479.0   5604.0   5729.0   5849.0   5955.0   6050.0   6151.0
6233.0
584   8339.0   8384.0   8427.0   8476.0   8537.0   8595.0   8643.0
8679.0
461  15063.0  15287.0  15482.0  15653.0  15825.0  16010.0  16146.0
16242.0
509  16297.0  16320.0  16334.0  16351.0  16366.0  16372.0  16352.0
16341.0
617  18361.0  18248.0  18084.0  17752.0  17372.0  17076.0  16759.0
16680.0
598  17242.0  17381.0  17492.0  17530.0  17527.0  17444.0  17326.0
17281.0
564  18718.0  18884.0  18886.0  18887.0  18890.0  18827.0  18704.0
18596.0
548  18834.0  18947.0  19073.0  19220.0  19381.0  19534.0  19686.0
19825.0
606  18393.0  18836.0  19114.0  19248.0  19488.0  19731.0  19914.0
20161.0

[10 rows x 24 columns]
```

Top ten countries with lowest male and female population in 2022

```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Lowest Male Population (2022)',
size=30)
sns.barplot(x='2022' , y='Country Name' , data=male_pop_bottom ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Lowest Female Population (2022)',
```

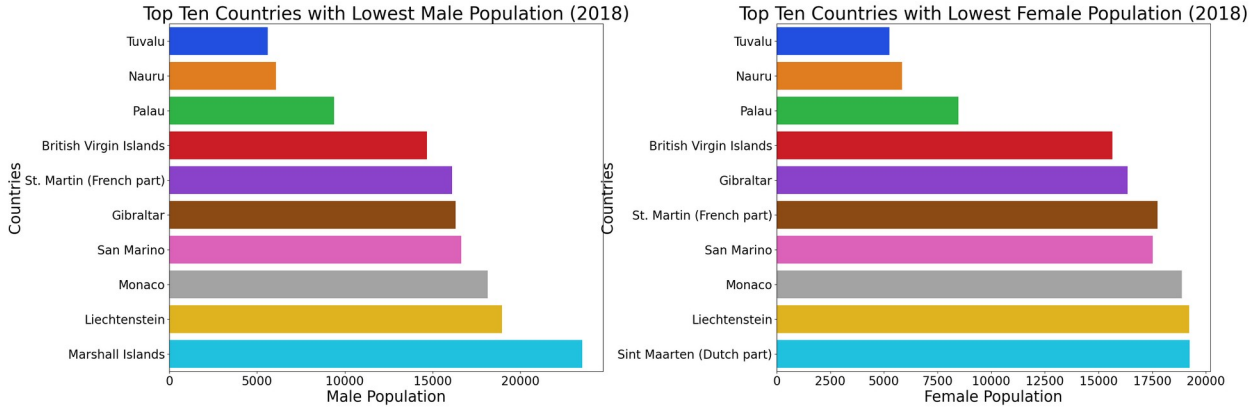
```
size=30)
sns.barplot(x='2022' , y='Country Name' , data=female_pop_bottom ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```



Top ten countries with lowest male and female population in 2018

```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Lowest Male Population (2018)',
size=30)
sns.barplot(x='2018' , y='Country Name' , data=male_pop_bottom ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Lowest Female Population (2018)',
size=30)
```

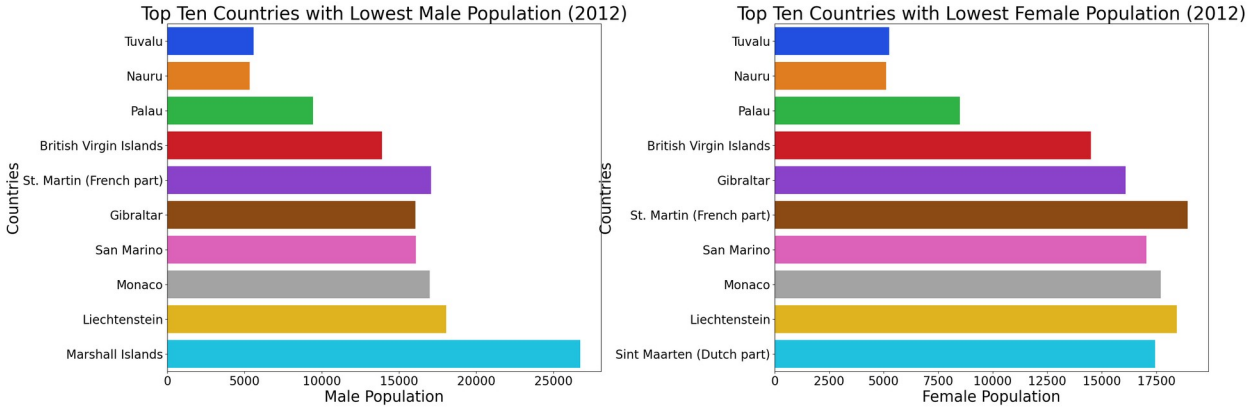
```
sns.barplot(x='2018' , y='Country Name' , data=female_pop_bottom ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```



Top ten countries with lowest male and female population in 2012

```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

#male
plt.subplot(1,2,1)
plt.title('Top Ten Countries with Lowest Male Population (2012)',
size=30)
sns.barplot(x='2012' , y='Country Name' , data=male_pop_bottom ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

#female
plt.subplot(1,2,2)
plt.title('Top Ten Countries with Lowest Female Population (2012)',
size=30)
sns.barplot(x='2012' , y='Country Name' , data=female_pop_bottom ,
```

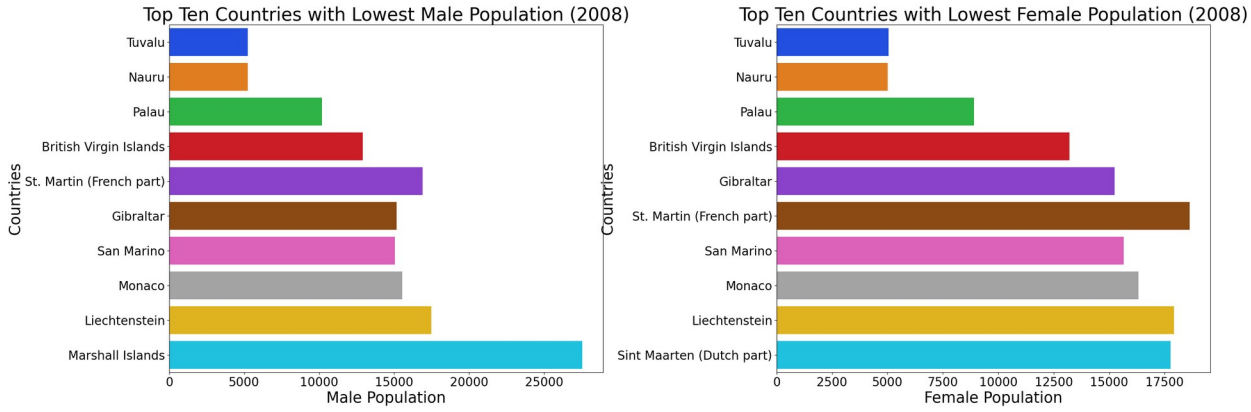
```
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```



Top ten countries with lowest male and female population in 2008

```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

plt.subplot(1,2,1)
plt.title('Top Ten Countries with Lowest Male Population (2008)' ,
size=30)
sns.barplot(x='2008' , y='Country Name' , data=male_pop_bottom ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.subplot(1,2,2)
plt.title('Top Ten Countries with Lowest Female Population (2008)' ,
size=30)
sns.barplot(x='2008' , y='Country Name' , data=female_pop_bottom ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
```

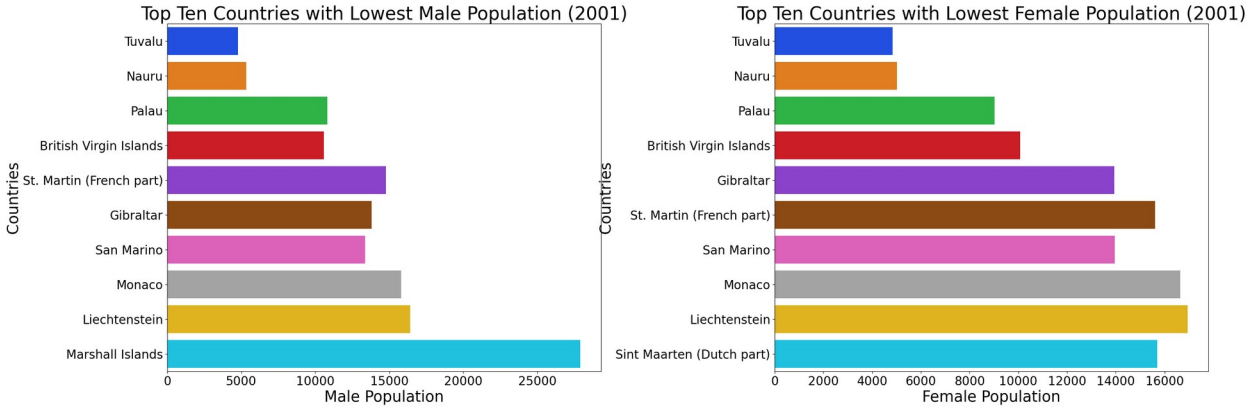
```
plt.xticks(size=20)
plt.yticks(size=20)

plt.show()
```



Top ten countries with lowest male and female population in 2001

```
plt.figure(figsize=(30,10))
plt.subplots_adjust(left=0.1,
                    bottom=0.1,
                    right=0.9,
                    top=0.9,
                    wspace=0.4,
                    hspace=0.4)

plt.subplot(1,2,1)
plt.title('Top Ten Countries with Lowest Male Population (2001)' ,
size=30)
sns.barplot(x='2001' , y='Country Name' , data=male_pop_bottom ,
palette='bright')
plt.xlabel('Male Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)

plt.subplot(1,2,2)
plt.title('Top Ten Countries with Lowest Female Population (2001)' ,
size=30)
sns.barplot(x='2001' , y='Country Name' , data=female_pop_bottom ,
palette='bright')
plt.xlabel('Female Population' , size=25)
plt.ylabel('Countries' , size=25)
plt.xticks(size=20)
plt.yticks(size=20)
```

```
plt.show()
```



Top 10 Countries with Male and Female Populations (2022)

```
# Merge male and female population data on 'Country Name'
merged_pop=pd.merge(male_pop,female_pop,on='Country Name' ,
suffixes=('_male' , '_female'))

# Calculate the total population for each country (male + female)
merged_pop['Total Population']=merged_pop['2022_male'] +
merged_pop['2022_female']

# Sort data based on total population in ascending order
total_merged_pop=merged_pop.sort_values(by='Total Population' ,
ascending=False)

# Select the top 10 countries with the highest total population
merged_pop_top=total_merged_pop.head(10)
merged_pop_top
```

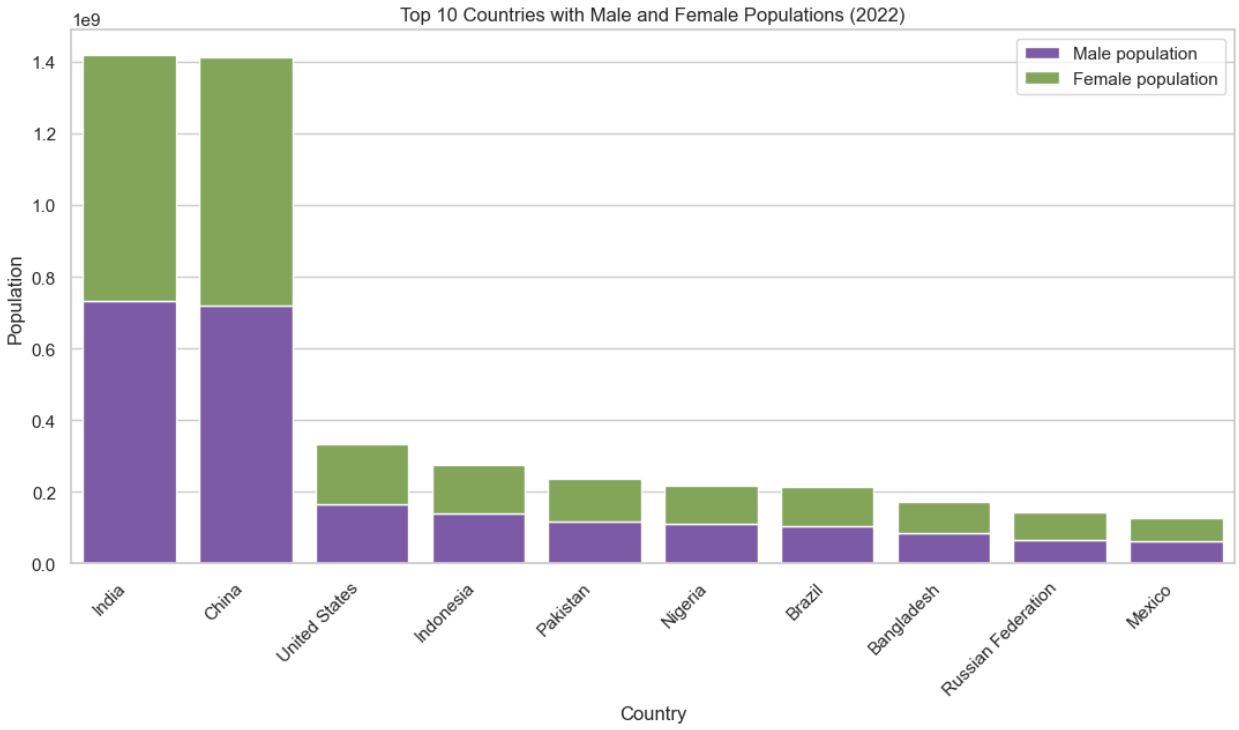
	Country Name	Indicator Code_male	2001_male	2002_male
89	India	SP.POP.TOTL.MA.IN	558291332.0	568334873.0
41	China	SP.POP.TOTL.MA.IN	650413443.0	654865007.0
206	United States	SP.POP.TOTL.MA.IN	140343133.0	141652391.0
90	Indonesia	SP.POP.TOTL.MA.IN	109210886.0	110738346.0
149	Pakistan	SP.POP.TOTL.MA.IN	82212668.0	84278393.0
144	Nigeria	SP.POP.TOTL.MA.IN	63420738.0	65158785.0
26	Brazil	SP.POP.TOTL.MA.IN	88233218.0	89303580.0
15	Bangladesh	SP.POP.TOTL.MA.IN	67083138.0	68254669.0

```
161  Russian Federation   SP.POP.TOTL.MA.IN   68107925.0   67715029.0

127              Mexico   SP.POP.TOTL.MA.IN   48635540.0   49386357.0


       2003_male    2004_male    2005_male    2006_male
2007_male  \
89   578236241.0  587990365.0  597477666.0  606611392.0  615506279.0

41   659030348.0  663027988.0  667008138.0  670816557.0  674398683.0

206  142865707.0  144210567.0  145570277.0  146996229.0  148402076.0

90   112245542.0  113702084.0  115167468.0  116685330.0  118236404.0

149   86127265.0   88049526.0   89942008.0   91810143.0   93744001.0

144   66946860.0   68785095.0   70670683.0   72611203.0   74620905.0

26    90318606.0   91303580.0   92281701.0   93237364.0   94163019.0

15    69348344.0   70392333.0   71337878.0   72029553.0   72599534.0

161   67309072.0   66921101.0   66542026.0   66219710.0   66050853.0

127   50132595.0   50881240.0   51619299.0   52329698.0   53024314.0


       2008_male  ...  2014_female  2015_female  2016_female
2017_female  \
89   624242020.0  ...  631697152.0  639323292.0  647012921.0
654607791.0
41   677925783.0  ...  669700351.0  673690703.0  677689913.0
682006802.0
206  149804127.0  ...  161084758.0  162158414.0  163224028.0
164151818.0
90   119801561.0  ...  127158711.0  128574643.0  129940374.0
131253454.0
149   95745628.0  ...  101436628.0  102985590.0  104630327.0
106376569.0
144   76699005.0  ...   88929439.0   91192351.0   93474951.0
95832952.0
26    95059746.0  ...  103274465.0  104179515.0  105065188.0
105937948.0
15    73036822.0  ...   78287731.0   79294197.0   80325176.0
81371533.0
161   65997139.0  ...   77153880.0   77273424.0   77378095.0
77431943.0
127   53699298.0  ...   60610526.0   61325120.0   62029592.0
62712641.0
```

```
     2018_female  2019_female  2020_female  2021_female
2022_female  \
89   661854076.0  668786993.0  675389679.0  681060412.0  685992675.0

41   685468978.0  688179990.0  690171848.0  691219627.0  691528501.0

206  164926348.0  165599805.0  167203010.0  167550001.0  168266219.0

90   132530163.0  133784436.0  134930389.0  135900714.0  136798063.0

149  108293156.0  110278237.0  112381099.0  114586264.0  116863982.0

144   98222504.0  100623652.0  103084231.0  105574310.0  108093075.0

26   106812144.0  107663080.0  108417015.0  109034931.0  109580471.0

15    82369393.0   83352043.0   84357236.0   85358163.0   86327159.0

161   77393346.0   77329730.0   77147284.0   76824577.0   76884903.0

127   63328698.0   63898082.0   64410851.0   64849001.0   65309171.0


     Total Population
89       1.417173e+09
41       1.412175e+09
206      3.332876e+08
90       2.755013e+08
149      2.358249e+08
144      2.185412e+08
26       2.153135e+08
15       1.711864e+08
161      1.435557e+08
127      1.275041e+08

[10 rows x 48 columns]
```

```
#stacked bar plot
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Top 10 Countries with Male and Female Populations (2022)')
sns.barplot(x='Country Name' , y='2022_male' , data=merged_pop_top ,
color='#7C4DB2' , label='Male population' )
sns.barplot(x='Country Name' , y='2022_female' , data=merged_pop_top ,
bottom=merged_pop_top['2022_male'] ,label='Female population' ,
color='#83B24D')
plt.legend()
plt.xlabel('Country')
plt.ylabel('Population')
```

```
plt.xticks(rotation=45 , ha='right')
plt.show()
```



Top 10 Countries with Male and Female Populations (2016)

```
# Calculate the total population for each country (male + female)
merged_pop['Total Population']=merged_pop['2016_male'] +
merged_pop['2016_female']

# Sort data based on total population in ascending order
total_merged_pop=merged_pop.sort_values(by='Total Population' ,
ascending=False)

# Select the top 10 countries with the highest total population
merged_pop_top=total_merged_pop.head(10)
merged_pop_top
```

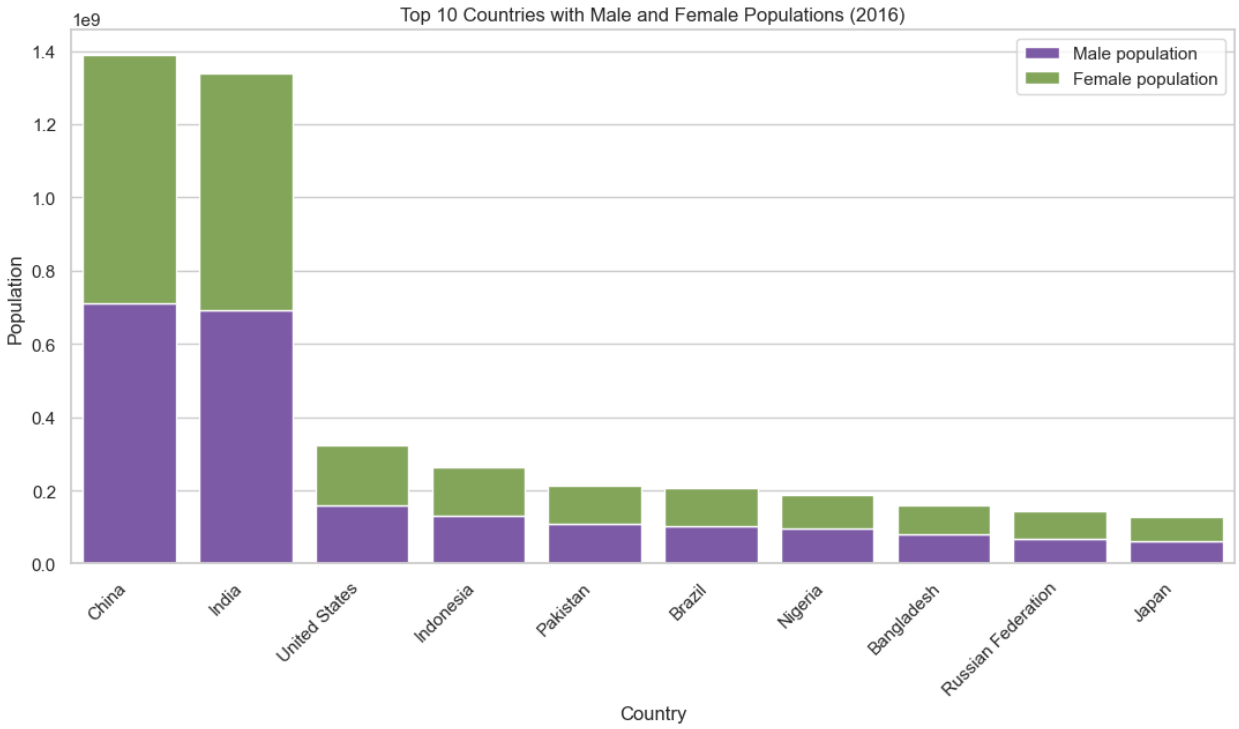
	Country Name	Indicator Code_male	2001_male	2002_male
41	China	SP.POP.TOTL.MA.IN	650413443.0	654865007.0
89	India	SP.POP.TOTL.MA.IN	558291332.0	568334873.0
206	United States	SP.POP.TOTL.MA.IN	140343133.0	141652391.0
90	Indonesia	SP.POP.TOTL.MA.IN	109210886.0	110738346.0

```
149            Pakistan   SP.POP.TOTL.MA.IN   82212668.0   84278393.0
26               Brazil   SP.POP.TOTL.MA.IN   88233218.0   89303580.0
144             Nigeria   SP.POP.TOTL.MA.IN   63420738.0   65158785.0
15           Bangladesh   SP.POP.TOTL.MA.IN   67083138.0   68254669.0
161  Russian Federation   SP.POP.TOTL.MA.IN   68107925.0   67715029.0
98                Japan   SP.POP.TOTL.MA.IN   62241801.0   62351052.0


       2003_male    2004_male    2005_male    2006_male
2007_male  \
41   659030348.0  663027988.0  667008138.0  670816557.0  674398683.0
89   578236241.0  587990365.0  597477666.0  606611392.0  615506279.0
206  142865707.0  144210567.0  145570277.0  146996229.0  148402076.0
90   112245542.0  113702084.0  115167468.0  116685330.0  118236404.0
149   86127265.0   88049526.0   89942008.0   91810143.0   93744001.0
26    90318606.0   91303580.0   92281701.0   93237364.0   94163019.0
144   66946860.0   68785095.0   70670683.0   72611203.0   74620905.0
15    69348344.0   70392333.0   71337878.0   72029553.0   72599534.0
161   67309072.0   66921101.0   66542026.0   66219710.0   66050853.0
98    62447363.0   62430367.0   62398129.0   62402271.0   62443045.0


       2008_male  ...  2014_female  2015_female  2016_female
2017_female  \
41   677925783.0  ...  669700351.0  673690703.0  677689913.0
682006802.0
89   624242020.0  ...  631697152.0  639323292.0  647012921.0
654607791.0
206  149804127.0  ...  161084758.0  162158414.0  163224028.0
164151818.0
90   119801561.0  ...  127158711.0  128574643.0  129940374.0
131253454.0
149   95745628.0  ...  101436628.0  102985590.0  104630327.0
106376569.0
26    95059746.0  ...  103274465.0  104179515.0  105065188.0
105937948.0
144   76699005.0  ...   88929439.0   91192351.0   93474951.0
```

```
95832952.0
15    73036822.0  ...   78287731.0   79294197.0   80325176.0
81371533.0
161   65997139.0  ...   77153880.0   77273424.0   77378095.0
77431943.0
98    62444510.0  ...   65324683.0   65267090.0   65245704.0
65206949.0

     2018_female  2019_female  2020_female  2021_female
2022_female  \
41   685468978.0  688179990.0  690171848.0  691219627.0  691528501.0

89   661854076.0  668786993.0  675389679.0  681060412.0  685992675.0

206  164926348.0  165599805.0  167203010.0  167550001.0  168266219.0

90   132530163.0  133784436.0  134930389.0  135900714.0  136798063.0

149  108293156.0  110278237.0  112381099.0  114586264.0  116863982.0

26   106812144.0  107663080.0  108417015.0  109034931.0  109580471.0

144   98222504.0  100623652.0  103084231.0  105574310.0  108093075.0

15    82369393.0   83352043.0   84357236.0   85358163.0   86327159.0

161   77393346.0   77329730.0   77147284.0   76824577.0   76884903.0

98    65140618.0   65065286.0   64885399.0   64594414.0   64314912.0


     Total Population
41       1.387790e+09
89       1.338636e+09
206      3.230718e+08
90       2.618502e+08
149      2.135248e+08
26       2.068596e+08
144      1.886669e+08
15       1.597846e+08
161      1.443424e+08
98       1.270760e+08

[10 rows x 48 columns]
```

```
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Top 10 Countries with Male and Female Populations (2016)')
sns.barplot(x='Country Name' , y='2016_male' , data=merged_pop_top ,
color='#7C4DB2' , label='Male population' )
```

```
sns.barplot(x='Country Name' , y='2016_female' , data=merged_pop_top ,
bottom=merged_pop_top['2016_male'] ,label='Female population' ,
color='#83B24D')
plt.legend()
plt.xlabel('Country')
plt.ylabel('Population')
plt.xticks(rotation=45 , ha='right')
plt.show()
```



Top 10 Countries with Male and Female Populations (2010)

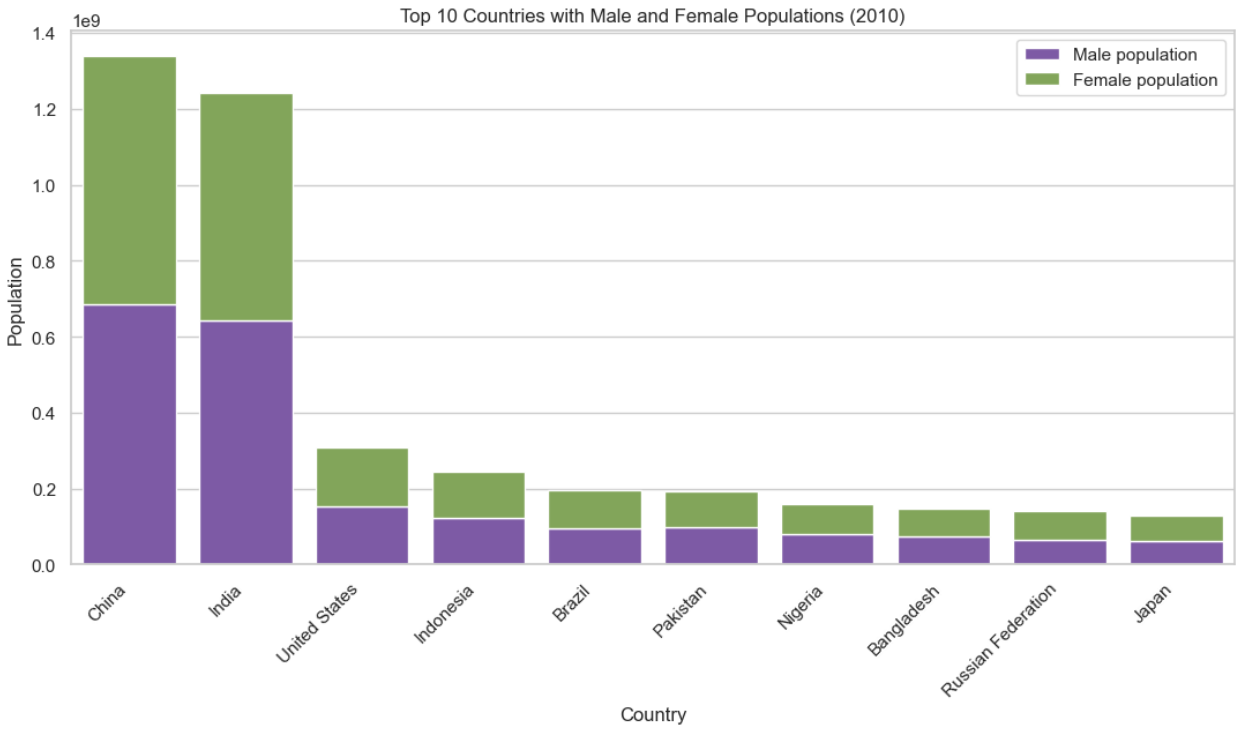
```
# Calculate the total population for each country (male + female)
merged_pop['Total Population']=merged_pop['2010_male'] +
merged_pop['2010_female']

# Sort data based on total population in ascending order
total_merged_pop=merged_pop.sort_values(by='Total Population' ,
ascending=False)

# Select the top 10 countries with the highest total population
merged_pop_top=total_merged_pop.head(10)
merged_pop_top
```

```
           Country Name Indicator Code_male    2001_male    2002_male
\
41                China   SP.POP.TOTL.MA.IN  650413443.0  654865007.0
```

```
89                India   SP.POP.TOTL.MA.IN  558291332.0  568334873.0

206       United States   SP.POP.TOTL.MA.IN  140343133.0  141652391.0

90            Indonesia   SP.POP.TOTL.MA.IN  109210886.0  110738346.0

26               Brazil   SP.POP.TOTL.MA.IN   88233218.0   89303580.0

149            Pakistan   SP.POP.TOTL.MA.IN   82212668.0   84278393.0

144             Nigeria   SP.POP.TOTL.MA.IN   63420738.0   65158785.0

15           Bangladesh   SP.POP.TOTL.MA.IN   67083138.0   68254669.0

161  Russian Federation   SP.POP.TOTL.MA.IN   68107925.0   67715029.0

98                Japan   SP.POP.TOTL.MA.IN   62241801.0   62351052.0


       2003_male    2004_male    2005_male    2006_male
2007_male  \
41   659030348.0  663027988.0  667008138.0  670816557.0  674398683.0

89   578236241.0  587990365.0  597477666.0  606611392.0  615506279.0

206  142865707.0  144210567.0  145570277.0  146996229.0  148402076.0

90   112245542.0  113702084.0  115167468.0  116685330.0  118236404.0

26    90318606.0   91303580.0   92281701.0   93237364.0   94163019.0

149   86127265.0   88049526.0   89942008.0   91810143.0   93744001.0

144   66946860.0   68785095.0   70670683.0   72611203.0   74620905.0

15    69348344.0   70392333.0   71337878.0   72029553.0   72599534.0

161   67309072.0   66921101.0   66542026.0   66219710.0   66050853.0

98    62447363.0   62430367.0   62398129.0   62402271.0   62443045.0


       2008_male  ...  2014_female  2015_female  2016_female
2017_female  \
41   677925783.0  ...  669700351.0  673690703.0  677689913.0
682006802.0
89   624242020.0  ...  631697152.0  639323292.0  647012921.0
654607791.0
206  149804127.0  ...  161084758.0  162158414.0  163224028.0
164151818.0
90   119801561.0  ...  127158711.0  128574643.0  129940374.0
```

```
131253454.0
26    95059746.0  ...  103274465.0  104179515.0  105065188.0
105937948.0
149   95745628.0  ...  101436628.0  102985590.0  104630327.0
106376569.0
144   76699005.0  ...   88929439.0   91192351.0   93474951.0
95832952.0
15    73036822.0  ...   78287731.0   79294197.0   80325176.0
81371533.0
161   65997139.0  ...   77153880.0   77273424.0   77378095.0
77431943.0
98    62444510.0  ...   65324683.0   65267090.0   65245704.0
65206949.0

     2018_female  2019_female  2020_female  2021_female
2022_female  \
41   685468978.0  688179990.0  690171848.0  691219627.0  691528501.0

89   661854076.0  668786993.0  675389679.0  681060412.0  685992675.0

206  164926348.0  165599805.0  167203010.0  167550001.0  168266219.0

90   132530163.0  133784436.0  134930389.0  135900714.0  136798063.0

26   106812144.0  107663080.0  108417015.0  109034931.0  109580471.0

149  108293156.0  110278237.0  112381099.0  114586264.0  116863982.0

144   98222504.0  100623652.0  103084231.0  105574310.0  108093075.0

15    82369393.0   83352043.0   84357236.0   85358163.0   86327159.0

161   77393346.0   77329730.0   77147284.0   76824577.0   76884903.0

98    65140618.0   65065286.0   64885399.0   64594414.0   64314912.0


     Total Population
41       1.337705e+09
89       1.240614e+09
206      3.093271e+08
90       2.440162e+08
26       1.963535e+08
149      1.944545e+08
144      1.609529e+08
15       1.483911e+08
161      1.428495e+08
98       1.280700e+08

[10 rows x 48 columns]
```

```
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Top 10 Countries with Male and Female Populations (2010)')
sns.barplot(x='Country Name' , y='2010_male' , data=merged_pop_top ,
color='#7C4DB2' , label='Male population' )
sns.barplot(x='Country Name' , y='2010_female' , data=merged_pop_top ,
bottom=merged_pop_top['2010_male'] ,label='Female population' ,
color='#83B24D')
plt.legend()
plt.xlabel('Country')
plt.ylabel('Population')
plt.xticks(rotation=45 , ha='right')
plt.show()
```



Top 10 Countries with Male and Female Populations (2001)

```
# Calculate the total population for each country (male + female)
merged_pop['Total Population']=merged_pop['2001_male'] +
merged_pop['2001_female']

# Sort data based on total population in ascending order
total_merged_pop=merged_pop.sort_values(by='Total Population' ,
ascending=False)

# Select the top 10 countries with the highest total population
```

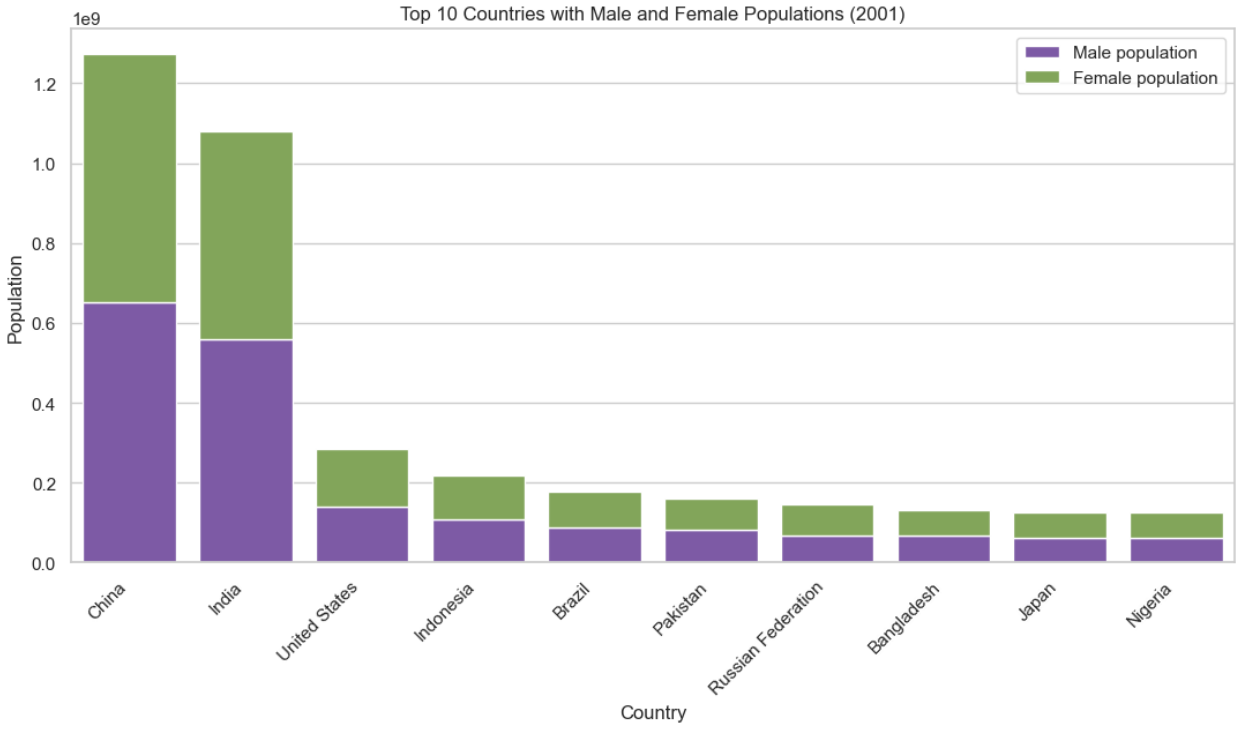
```
merged_pop_top=total_merged_pop.head(10)
merged_pop_top
```

```
           Country Name Indicator Code_male    2001_male    2002_male
\
41                China   SP.POP.TOTL.MA.IN  650413443.0  654865007.0

89                India   SP.POP.TOTL.MA.IN  558291332.0  568334873.0

206       United States   SP.POP.TOTL.MA.IN  140343133.0  141652391.0

90            Indonesia   SP.POP.TOTL.MA.IN  109210886.0  110738346.0

26               Brazil   SP.POP.TOTL.MA.IN   88233218.0   89303580.0

149            Pakistan   SP.POP.TOTL.MA.IN   82212668.0   84278393.0

161  Russian Federation   SP.POP.TOTL.MA.IN   68107925.0   67715029.0

15           Bangladesh   SP.POP.TOTL.MA.IN   67083138.0   68254669.0

98                Japan   SP.POP.TOTL.MA.IN   62241801.0   62351052.0

144             Nigeria   SP.POP.TOTL.MA.IN   63420738.0   65158785.0


       2003_male    2004_male    2005_male    2006_male
2007_male  \
41   659030348.0  663027988.0  667008138.0  670816557.0  674398683.0

89   578236241.0  587990365.0  597477666.0  606611392.0  615506279.0

206  142865707.0  144210567.0  145570277.0  146996229.0  148402076.0

90   112245542.0  113702084.0  115167468.0  116685330.0  118236404.0

26    90318606.0   91303580.0   92281701.0   93237364.0   94163019.0

149   86127265.0   88049526.0   89942008.0   91810143.0   93744001.0

161   67309072.0   66921101.0   66542026.0   66219710.0   66050853.0

15    69348344.0   70392333.0   71337878.0   72029553.0   72599534.0

98    62447363.0   62430367.0   62398129.0   62402271.0   62443045.0

144   66946860.0   68785095.0   70670683.0   72611203.0   74620905.0


       2008_male  ...  2014_female  2015_female  2016_female
2017_female  \
41   677925783.0  ...  669700351.0  673690703.0  677689913.0
```

```
682006802.0
89   624242020.0  ...  631697152.0  639323292.0  647012921.0
654607791.0
206  149804127.0  ...  161084758.0  162158414.0  163224028.0
164151818.0
90   119801561.0  ...  127158711.0  128574643.0  129940374.0
131253454.0
26    95059746.0  ...  103274465.0  104179515.0  105065188.0
105937948.0
149   95745628.0  ...  101436628.0  102985590.0  104630327.0
106376569.0
161   65997139.0  ...   77153880.0   77273424.0   77378095.0
77431943.0
15    73036822.0  ...   78287731.0   79294197.0   80325176.0
81371533.0
98    62444510.0  ...   65324683.0   65267090.0   65245704.0
65206949.0
144   76699005.0  ...   88929439.0   91192351.0   93474951.0
95832952.0

     2018_female  2019_female  2020_female  2021_female
2022_female  \
41   685468978.0  688179990.0  690171848.0  691219627.0  691528501.0

89   661854076.0  668786993.0  675389679.0  681060412.0  685992675.0

206  164926348.0  165599805.0  167203010.0  167550001.0  168266219.0

90   132530163.0  133784436.0  134930389.0  135900714.0  136798063.0

26   106812144.0  107663080.0  108417015.0  109034931.0  109580471.0

149  108293156.0  110278237.0  112381099.0  114586264.0  116863982.0

161   77393346.0   77329730.0   77147284.0   76824577.0   76884903.0

15    82369393.0   83352043.0   84357236.0   85358163.0   86327159.0

98    65140618.0   65065286.0   64885399.0   64594414.0   64314912.0

144   98222504.0  100623652.0  103084231.0  105574310.0  108093075.0


     Total Population
41       1.271850e+09
89       1.078971e+09
206      2.849690e+08
90       2.171124e+08
26       1.782119e+08
149      1.592177e+08
```

```
161      1.459765e+08
15       1.316705e+08
98       1.271490e+08
144      1.261527e+08

[10 rows x 48 columns]
```

```
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Top 10 Countries with Male and Female Populations (2001)')
sns.barplot(x='Country Name' , y='2001_male' , data=merged_pop_top ,
color='#7C4DB2' , label='Male population' )
sns.barplot(x='Country Name' , y='2001_female' , data=merged_pop_top ,
bottom=merged_pop_top['2001_male'] ,label='Female population' ,
color='#83B24D')
plt.legend()
plt.xlabel('Country')
plt.ylabel('Population')
plt.xticks(rotation=45 , ha='right')
plt.show()
```



Bottom 10 Countries with Male and Female Populations (2022)

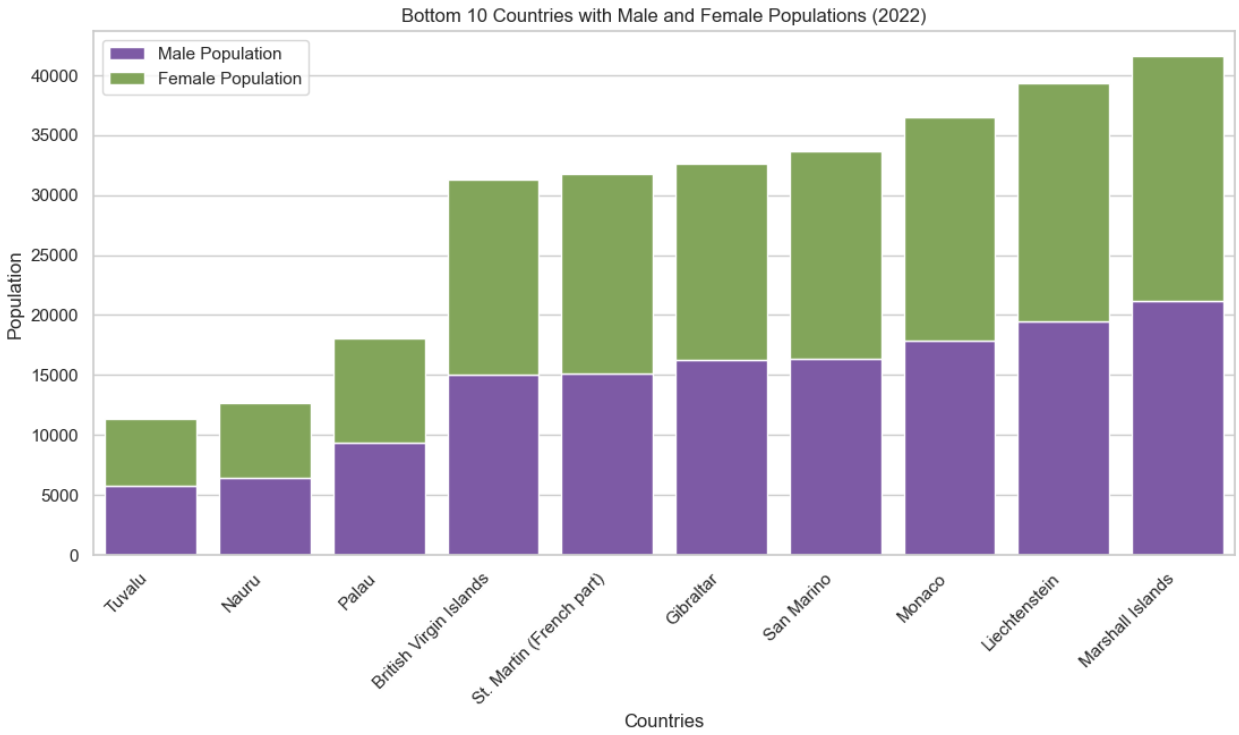
```
# Merge male and female population data on 'Country Name'
merged_pop = pd.merge(male_pop, female_pop, on="Country Name",
suffixes=("_male", "_female"))

# Calculate the total population for each country (male + female)
merged_pop['Total Population'] = merged_pop["2022_male"] +
merged_pop["2022_female"]

# Sort data based on total population in descending order
total_merged_pop1=merged_pop.sort_values(by='Total Population' ,
ascending=True)

# Select the top 10 countries with the lowest total population
merged_pop_bottom=total_merged_pop1.head(10)

merged_pop_bottom
```

```
                  Country Name Indicator Code_male  2001_male
2002_male  \
201                     Tuvalu   SP.POP.TOTL.MA.IN     4777.0
4787.0
137                      Nauru   SP.POP.TOTL.MA.IN     5349.0
5340.0
150                      Palau   SP.POP.TOTL.MA.IN    10804.0
10784.0
27     British Virgin Islands   SP.POP.TOTL.MA.IN    10588.0
10851.0
183  St. Martin (French part)   SP.POP.TOTL.MA.IN    14777.0
15104.0
75                   Gibraltar   SP.POP.TOTL.MA.IN    13790.0
13863.0
164                San Marino   SP.POP.TOTL.MA.IN    13378.0
13687.0
130                    Monaco   SP.POP.TOTL.MA.IN    15791.0
15768.0
114             Liechtenstein   SP.POP.TOTL.MA.IN    16424.0
16583.0
124          Marshall Islands   SP.POP.TOTL.MA.IN    27906.0
27945.0

     2003_male  2004_male  2005_male  2006_male  2007_male  2008_male
...  \
201     4833.0     4914.0     4991.0     5066.0     5143.0     5227.0
...
137     5329.0     5316.0     5298.0     5272.0     5247.0     5228.0
...
150    10767.0    10744.0    10666.0    10523.0    10358.0    10190.0
```

```
...
27     11133.0    11439.0    11774.0    12133.0    12512.0    12918.0
...
183    15426.0    15749.0    16063.0    16358.0    16645.0    16911.0
...
75     14081.0    14300.0    14527.0    14749.0    14954.0    15158.0
...
164    13998.0    14246.0    14460.0    14694.0    14899.0    15052.0
...
130    15741.0    15705.0    15662.0    15604.0    15518.0    15542.0
...
114    16743.0    16901.0    17052.0    17197.0    17335.0    17473.0
...
124    27939.0    27902.0    27843.0    27769.0    27678.0    27555.0
...

     2014_female  2015_female  2016_female  2017_female
2018_female  \
201       5272.0       5261.0       5244.0       5230.0       5252.0

137       5360.0       5479.0       5604.0       5729.0       5849.0

150       8353.0       8339.0       8384.0       8427.0       8476.0

27       14826.0      15063.0      15287.0      15482.0      15653.0

183      18501.0      18361.0      18248.0      18084.0      17752.0

75       16250.0      16297.0      16320.0      16334.0      16351.0

164      17148.0      17242.0      17381.0      17492.0      17530.0

130      18393.0      18718.0      18884.0      18886.0      18887.0

114      18719.0      18834.0      18947.0      19073.0      19220.0

124      24596.0      24111.0      23591.0      23040.0      22460.0


     2019_female  2020_female  2021_female  2022_female  Total
Population
201       5301.0       5367.0       5449.0       5513.0
11312.0
137       5955.0       6050.0       6151.0       6233.0
12668.0
150       8537.0       8595.0       8643.0       8679.0
18055.0
27       15825.0      16010.0      16146.0      16242.0
31304.0
183      17372.0      17076.0      16759.0      16680.0
```

```
31791.0
75       16366.0      16372.0      16352.0      16341.0
32649.0
164      17527.0      17444.0      17326.0      17281.0
33661.0
130      18890.0      18827.0      18704.0      18596.0
36468.0
114      19381.0      19534.0      19686.0      19825.0
39327.0
124      21855.0      21224.0      20567.0      20346.0
41569.0

[10 rows x 48 columns]
```

```
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Bottom 10 Countries with Male and Female Populations
(2022)')
sns.barplot(x='Country Name' , y='2022_male' ,
data=merged_pop_bottom , label = 'Male Population' , color='#7C4DB2')
sns.barplot(x='Country Name' , y='2022_female' ,
data=merged_pop_bottom , label='Female Population' ,
bottom=merged_pop_bottom['2022_male' ], color='#83B24D')
plt.xlabel('Countries')
plt.ylabel('Population')
plt.legend()
plt.xticks(rotation=45 , ha='right')
plt.show()
```



Bottom 10 Countries with Male and Female Populations (2016)

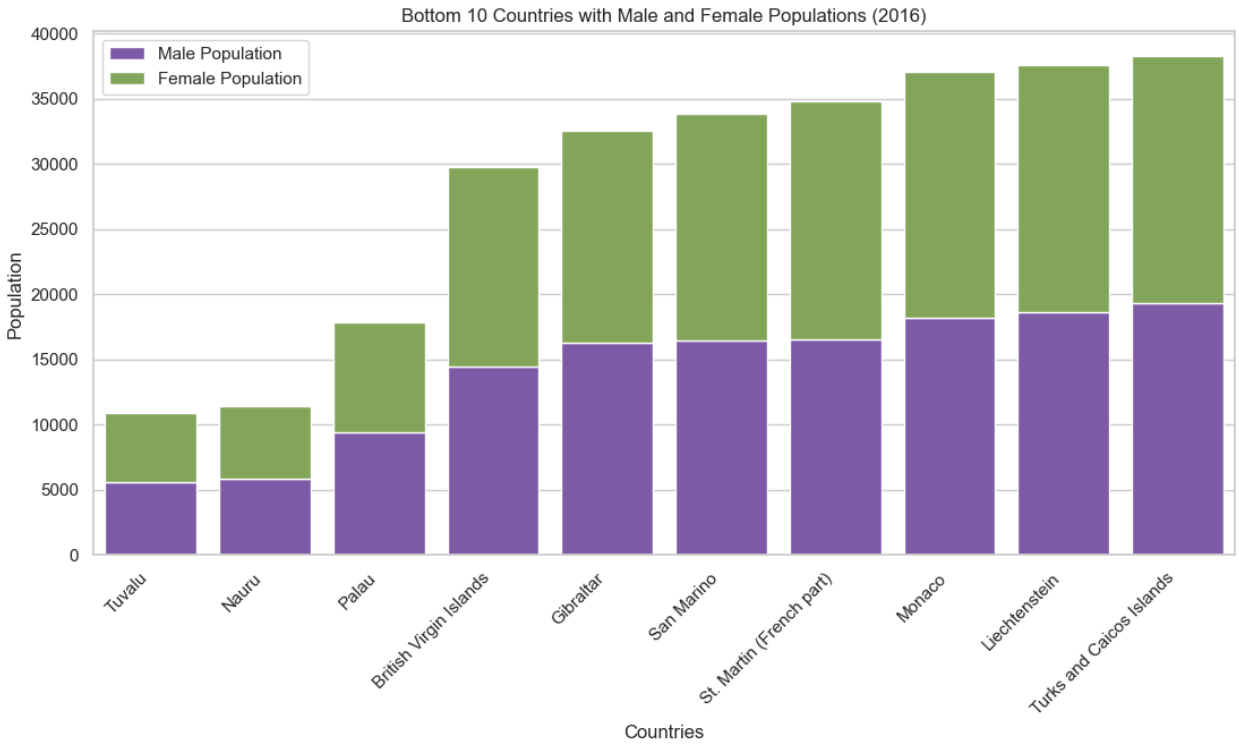
```
# Calculate the total population for each country (male + female)
merged_pop["Total Population"] = merged_pop["2016_male"] +
merged_pop["2016_female"]

# Sort data based on total population in descending order
total_merged_pop1=merged_pop.sort_values(by='Total Population' ,
ascending=True)

# Select the top 10 countries with the highest total population
merged_pop_bottom=total_merged_pop1.head(10)

merged_pop_bottom
```

```
                  Country Name Indicator Code_male  2001_male
2002_male  \
201                    Tuvalu   SP.POP.TOTL.MA.IN     4777.0
4787.0
137                     Nauru   SP.POP.TOTL.MA.IN     5349.0
5340.0
150                     Palau   SP.POP.TOTL.MA.IN    10804.0
10784.0
27     British Virgin Islands   SP.POP.TOTL.MA.IN    10588.0
10851.0
75                   Gibraltar   SP.POP.TOTL.MA.IN    13790.0
```

```
13863.0
164                San Marino   SP.POP.TOTL.MA.IN    13378.0
13687.0
183  St. Martin (French part)   SP.POP.TOTL.MA.IN    14777.0
15104.0
130                    Monaco   SP.POP.TOTL.MA.IN    15791.0
15768.0
114             Liechtenstein   SP.POP.TOTL.MA.IN    16424.0
16583.0
200  Turks and Caicos Islands   SP.POP.TOTL.MA.IN    10041.0
10559.0

     2003_male  2004_male  2005_male  2006_male  2007_male  2008_male
...  \
201     4833.0     4914.0     4991.0     5066.0     5143.0     5227.0
...
137     5329.0     5316.0     5298.0     5272.0     5247.0     5228.0
...
150    10767.0    10744.0    10666.0    10523.0    10358.0    10190.0
...
27     11133.0    11439.0    11774.0    12133.0    12512.0    12918.0
...
75     14081.0    14300.0    14527.0    14749.0    14954.0    15158.0
...
164    13998.0    14246.0    14460.0    14694.0    14899.0    15052.0
...
183    15426.0    15749.0    16063.0    16358.0    16645.0    16911.0
...
130    15741.0    15705.0    15662.0    15604.0    15518.0    15542.0
...
114    16743.0    16901.0    17052.0    17197.0    17335.0    17473.0
...
200    11129.0    11691.0    12249.0    12812.0    13382.0    13959.0
...

     2014_female  2015_female  2016_female  2017_female
2018_female  \
201       5272.0       5261.0       5244.0       5230.0       5252.0

137       5360.0       5479.0       5604.0       5729.0       5849.0

150       8353.0       8339.0       8384.0       8427.0       8476.0

27       14826.0      15063.0      15287.0      15482.0      15653.0

75       16250.0      16297.0      16320.0      16334.0      16351.0

164      17148.0      17242.0      17381.0      17492.0      17530.0

183      18501.0      18361.0      18248.0      18084.0      17752.0
```

```
130      18393.0      18718.0      18884.0      18886.0      18887.0

114      18719.0      18834.0      18947.0      19073.0      19220.0

200      17267.0      18046.0      18906.0      19707.0      20535.0


     2019_female  2020_female  2021_female  2022_female  Total
Population
201       5301.0       5367.0       5449.0       5513.0
10853.0
137       5955.0       6050.0       6151.0       6233.0
11436.0
150       8537.0       8595.0       8643.0       8679.0
17815.0
27       15825.0      16010.0      16146.0      16242.0
29740.0
75       16366.0      16372.0      16352.0      16341.0
32564.0
164      17527.0      17444.0      17326.0      17281.0
33834.0
183      17372.0      17076.0      16759.0      16680.0
34811.0
130      18890.0      18827.0      18704.0      18596.0
37071.0
114      19381.0      19534.0      19686.0      19825.0
37610.0
200      21341.0      21952.0      22385.0      22697.0
38247.0

[10 rows x 48 columns]
```

```
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Bottom 10 Countries with Male and Female Populations
(2016)')
sns.barplot(x='Country Name' , y='2016_male' ,
data=merged_pop_bottom , label = 'Male Population' , color='#7C4DB2')
sns.barplot(x='Country Name' , y='2016_female' ,
data=merged_pop_bottom , label='Female Population' ,
bottom=merged_pop_bottom['2016_male' ], color='#83B24D')
plt.xlabel('Countries')
plt.ylabel('Population')
plt.legend()
plt.xticks(rotation=45 , ha='right')
plt.show()
```



Bottom 10 Countries with Male and Female Populations (2010)

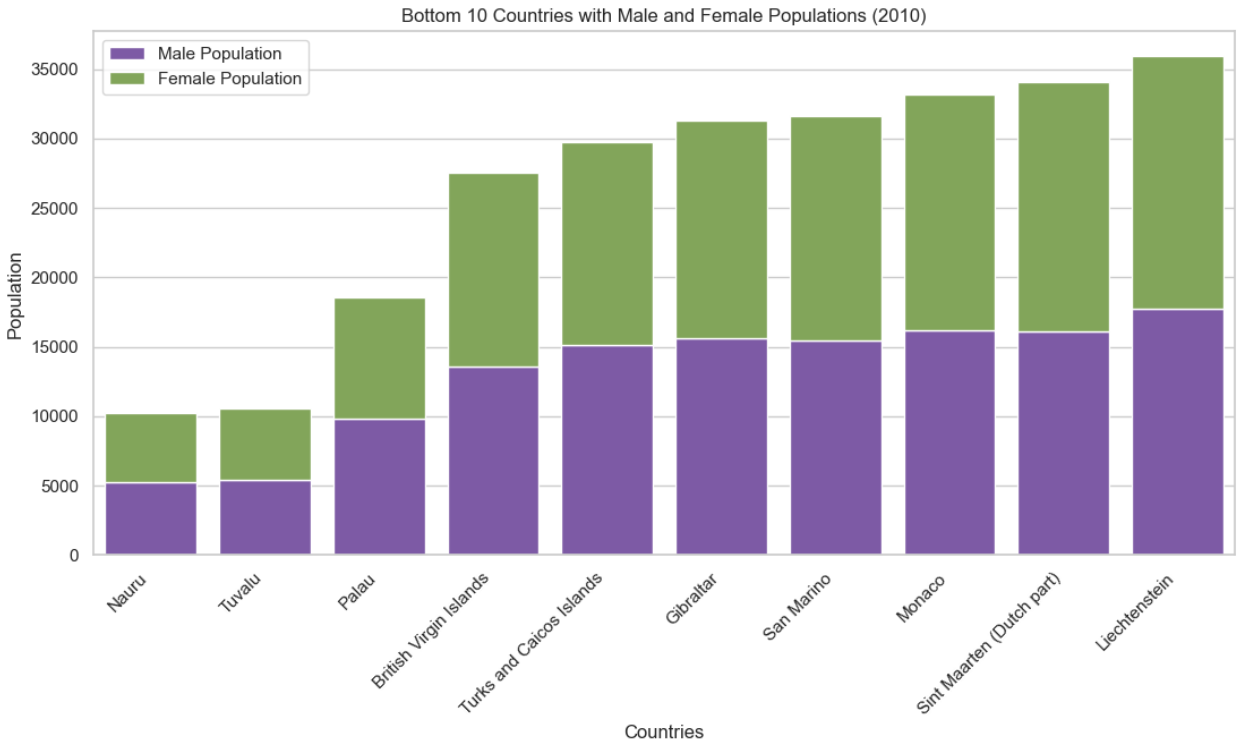
```
# Calculate the total population for each country (male + female)
merged_pop["Total Population"] = merged_pop["2010_male"] +
merged_pop["2010_female"]

# Sort data based on total population in descending order
total_merged_pop1=merged_pop.sort_values(by='Total Population' ,
ascending=True)

# Select the top 10 countries with the highest total population
merged_pop_bottom=total_merged_pop1.head(10)

merged_pop_bottom
```

```
                  Country Name Indicator Code_male  2001_male
2002_male  \
137                      Nauru   SP.POP.TOTL.MA.IN     5349.0
5340.0
201                     Tuvalu   SP.POP.TOTL.MA.IN     4777.0
4787.0
150                      Palau   SP.POP.TOTL.MA.IN    10804.0
10784.0
27      British Virgin Islands   SP.POP.TOTL.MA.IN    10588.0
10851.0
200   Turks and Caicos Islands   SP.POP.TOTL.MA.IN    10041.0
```

```
10559.0
75                   Gibraltar   SP.POP.TOTL.MA.IN    13790.0
13863.0
164                 San Marino   SP.POP.TOTL.MA.IN    13378.0
13687.0
130                     Monaco   SP.POP.TOTL.MA.IN    15791.0
15768.0
172  Sint Maarten (Dutch part)   SP.POP.TOTL.MA.IN    14909.0
14963.0
114               Liechtenstein   SP.POP.TOTL.MA.IN    16424.0
16583.0

     2003_male  2004_male  2005_male  2006_male  2007_male  2008_male
...  \
137     5329.0     5316.0     5298.0     5272.0     5247.0     5228.0
...
201     4833.0     4914.0     4991.0     5066.0     5143.0     5227.0
...
150    10767.0    10744.0    10666.0    10523.0    10358.0    10190.0
...
27     11133.0    11439.0    11774.0    12133.0    12512.0    12918.0
...
200    11129.0    11691.0    12249.0    12812.0    13382.0    13959.0
...
75     14081.0    14300.0    14527.0    14749.0    14954.0    15158.0
...
164    13998.0    14246.0    14460.0    14694.0    14899.0    15052.0
...
130    15741.0    15705.0    15662.0    15604.0    15518.0    15542.0
...
172    15263.0    15712.0    15914.0    16068.0    16192.0    16206.0
...
114    16743.0    16901.0    17052.0    17197.0    17335.0    17473.0
...

     2014_female  2015_female  2016_female  2017_female
2018_female  \
137       5360.0       5479.0       5604.0       5729.0       5849.0

201       5272.0       5261.0       5244.0       5230.0       5252.0

150       8353.0       8339.0       8384.0       8427.0       8476.0

27       14826.0      15063.0      15287.0      15482.0      15653.0

200      17267.0      18046.0      18906.0      19707.0      20535.0

75       16250.0      16297.0      16320.0      16334.0      16351.0

164      17148.0      17242.0      17381.0      17492.0      17530.0
```

```
130      18393.0      18718.0      18884.0      18886.0      18887.0

172      17951.0      18393.0      18836.0      19114.0      19248.0

114      18719.0      18834.0      18947.0      19073.0      19220.0


     2019_female  2020_female  2021_female  2022_female  Total
Population
137       5955.0       6050.0       6151.0       6233.0
10241.0
201       5301.0       5367.0       5449.0       5513.0
10550.0
150       8537.0       8595.0       8643.0       8679.0
18540.0
27       15825.0      16010.0      16146.0      16242.0
27557.0
200      21341.0      21952.0      22385.0      22697.0
29725.0
75       16366.0      16372.0      16352.0      16341.0
31262.0
164      17527.0      17444.0      17326.0      17281.0
31607.0
130      18890.0      18827.0      18704.0      18596.0
33178.0
172      19488.0      19731.0      19914.0      20161.0
34056.0
114      19381.0      19534.0      19686.0      19825.0
35926.0

[10 rows x 48 columns]
```

```
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Bottom 10 Countries with Male and Female Populations
(2010)')
sns.barplot(x='Country Name' , y='2010_male' ,
data=merged_pop_bottom , label = 'Male Population' , color='#7C4DB2')
sns.barplot(x='Country Name' , y='2010_female' ,
data=merged_pop_bottom , label='Female Population' ,
bottom=merged_pop_bottom['2010_male' ], color='#83B24D')
plt.xlabel('Countries')
plt.ylabel('Population')
plt.legend()
plt.xticks(rotation=45 , ha='right')
plt.show()
```



Bottom 10 Countries with Male and Female Populations (2001)

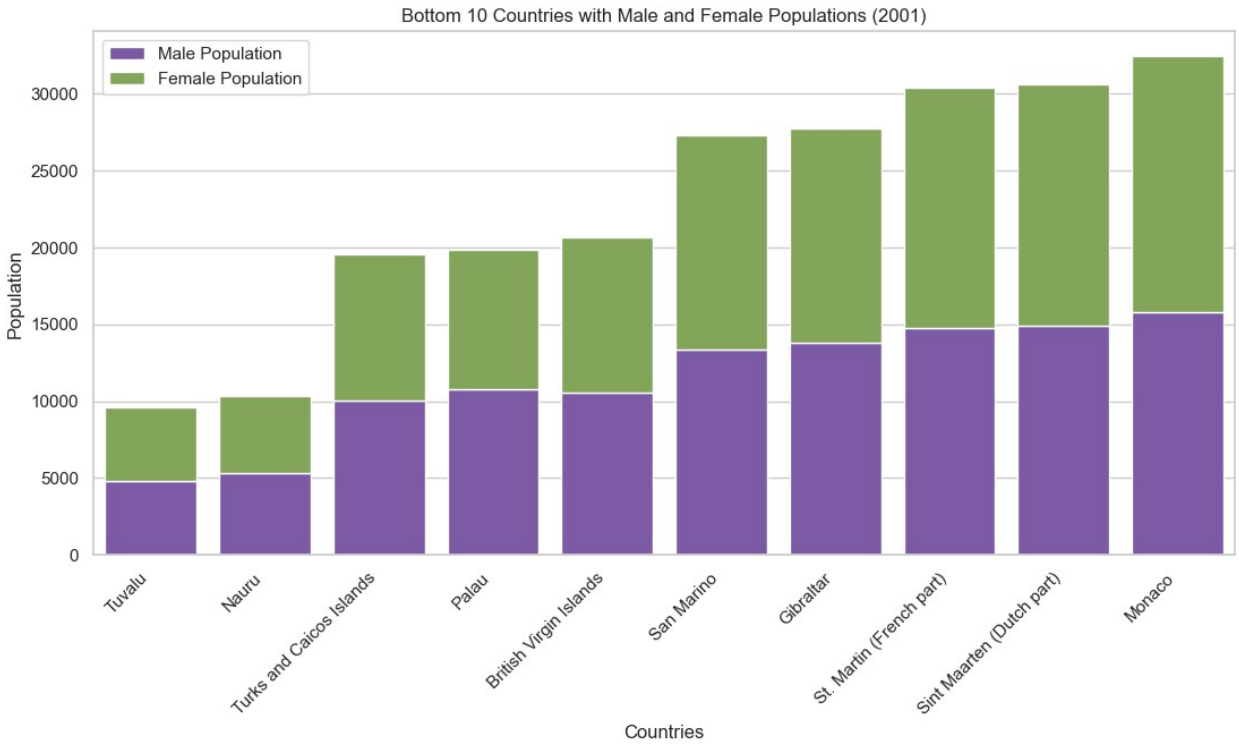
```
# Calculate the total population for each country (male + female)
merged_pop["Total Population"] = merged_pop["2001_male"] +
merged_pop["2001_female"]

# Sort data based on total population in descending order
total_merged_pop1=merged_pop.sort_values(by='Total Population' ,
ascending=True)

# Select the top 10 countries with the highest total population
merged_pop_bottom=total_merged_pop1.head(10)

merged_pop_bottom
```

```
                  Country Name Indicator Code_male  2001_male
2002_male  \
201                    Tuvalu   SP.POP.TOTL.MA.IN     4777.0
4787.0
137                     Nauru   SP.POP.TOTL.MA.IN     5349.0
5340.0
200   Turks and Caicos Islands   SP.POP.TOTL.MA.IN    10041.0
10559.0
150                     Palau   SP.POP.TOTL.MA.IN    10804.0
10784.0
27      British Virgin Islands   SP.POP.TOTL.MA.IN    10588.0
```

```
10851.0
164                 San Marino   SP.POP.TOTL.MA.IN    13378.0
13687.0
75                   Gibraltar   SP.POP.TOTL.MA.IN    13790.0
13863.0
183   St. Martin (French part)   SP.POP.TOTL.MA.IN    14777.0
15104.0
172  Sint Maarten (Dutch part)   SP.POP.TOTL.MA.IN    14909.0
14963.0
130                     Monaco   SP.POP.TOTL.MA.IN    15791.0
15768.0

     2003_male  2004_male  2005_male  2006_male  2007_male  2008_male
...  \
201     4833.0     4914.0     4991.0     5066.0     5143.0     5227.0
...
137     5329.0     5316.0     5298.0     5272.0     5247.0     5228.0
...
200    11129.0    11691.0    12249.0    12812.0    13382.0    13959.0
...
150    10767.0    10744.0    10666.0    10523.0    10358.0    10190.0
...
27     11133.0    11439.0    11774.0    12133.0    12512.0    12918.0
...
164    13998.0    14246.0    14460.0    14694.0    14899.0    15052.0
...
75     14081.0    14300.0    14527.0    14749.0    14954.0    15158.0
...
183    15426.0    15749.0    16063.0    16358.0    16645.0    16911.0
...
172    15263.0    15712.0    15914.0    16068.0    16192.0    16206.0
...
130    15741.0    15705.0    15662.0    15604.0    15518.0    15542.0
...

     2014_female  2015_female  2016_female  2017_female
2018_female  \
201       5272.0       5261.0       5244.0       5230.0       5252.0

137       5360.0       5479.0       5604.0       5729.0       5849.0

200      17267.0      18046.0      18906.0      19707.0      20535.0

150       8353.0       8339.0       8384.0       8427.0       8476.0

27       14826.0      15063.0      15287.0      15482.0      15653.0

164      17148.0      17242.0      17381.0      17492.0      17530.0

75       16250.0      16297.0      16320.0      16334.0      16351.0
```

```
183      18501.0      18361.0      18248.0      18084.0      17752.0

172      17951.0      18393.0      18836.0      19114.0      19248.0

130      18393.0      18718.0      18884.0      18886.0      18887.0


     2019_female  2020_female  2021_female  2022_female  Total
Population
201       5301.0       5367.0       5449.0       5513.0
9622.0
137       5955.0       6050.0       6151.0       6233.0
10362.0
200      21341.0      21952.0      22385.0      22697.0
19578.0
150       8537.0       8595.0       8643.0       8679.0
19828.0
27       15825.0      16010.0      16146.0      16242.0
20657.0
164      17527.0      17444.0      17326.0      17281.0
27335.0
75       16366.0      16372.0      16352.0      16341.0
27721.0
183      17372.0      17076.0      16759.0      16680.0
30387.0
172      19488.0      19731.0      19914.0      20161.0
30601.0
130      18890.0      18827.0      18704.0      18596.0
32443.0

[10 rows x 48 columns]
```

```
plt.figure(figsize=(13,6))
sns.set(style='whitegrid')

plt.title('Bottom 10 Countries with Male and Female Populations
(2001)')
sns.barplot(x='Country Name' , y='2001_male' ,
data=merged_pop_bottom , label = 'Male Population' , color='#7C4DB2')
sns.barplot(x='Country Name' , y='2001_female' ,
data=merged_pop_bottom , label='Female Population' ,
bottom=merged_pop_bottom['2001_male' ], color='#83B24D')
plt.xlabel('Countries')
plt.ylabel('Population')
plt.legend()
plt.xticks(rotation=45 , ha='right')
plt.show()
```


Bottom 10 Countries with Male and Female Populations (2001)
Male Population
Female Population
Population
0
5000
10000
15000
20000
25000
30000
Tuvalu
Nauru
Turks and Caicos Islands
Palau
British Virgin Islands
San Marino
Gibraltar
St. Martin (French part)
Sint Maarten (Dutch part)
Monaco
Countries