

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

```
In [2]: df = pd.read_csv(r'C:\Users\saswa\OneDrive\Desktop\Pinaki_WorldBank_Population\API_SP.POP.TOTL_DS2_en_csv_v2_5871594.csv')
```

```
In [3]: df
```

	Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962	1963	1964	1965	...	2013	2014	2015	2016	2017	2018
0	Aruba	ABW	Population, total	SP.POP.TOTL	54608.0	55811.0	56682.0	57475.0	58178.0	58782.0	...	102880.0	103594.0	104257.0	104874.0	105439.0	105962.0
1	Africa Eastern and Southern	AFE	Population, total	SP.POP.TOTL	130692579.0	134169237.0	137835590.0	141630546.0	145605995.0	149742351.0	...	567892149.0	583651101.0	600008424.0	616377605.0	632746570.0	649757148.0
2	Afghanistan	AFG	Population, total	SP.POP.TOTL	8622466.0	8790140.0	8969047.0	9157465.0	9355514.0	9565147.0	...	31541209.0	32716210.0	33753499.0	34636207.0	35643418.0	36686784.0
3	Africa Western and Central	AFW	Population, total	SP.POP.TOTL	97256290.0	99314028.0	101445032.0	103667517.0	105959979.0	108336203.0	...	387204553.0	397855507.0	408690375.0	419778384.0	431138704.0	442646825.0
4	Angola	AGO	Population, total	SP.POP.TOTL	5357195.0	5441333.0	5521400.0	5599827.0	5673199.0	5736582.0	...	26147002.0	27128337.0	28127721.0	29154746.0	30208628.0	31273533.0
...	
261	Kosovo	XKX	Population, total	SP.POP.TOTL	947000.0	966000.0	994000.0	1022000.0	1050000.0	1078000.0	...	1818117.0	1812771.0	1788196.0	1777557.0	1791003.0	1797085.0
262	Yemen, Rep.	YEM	Population, total	SP.POP.TOTL	5542459.0	5646668.0	5753386.0	5860197.0	5973803.0	6097298.0	...	26984002.0	27753304.0	28516545.0	29274002.0	30034389.0	30790513.0
263	South Africa	ZAF	Population, total	SP.POP.TOTL	16520441.0	16989464.0	17503133.0	18042215.0	18603097.0	19187194.0	...	53873616.0	54729551.0	55876504.0	56422274.0	56641209.0	57339635.0
264	Zambia	ZMB	Population, total	SP.POP.TOTL	3119430.0	3219451.0	3323427.0	3431381.0	3542764.0	3658024.0	...	15234976.0	15737793.0	16248230.0	16767761.0	17298054.0	17835893.0
265	Zimbabwe	ZWE	Population, total	SP.POP.TOTL	3806310.0	3925952.0	4049778.0	4177931.0	4310332.0	4447149.0	...	13555422.0	13855753.0	14154937.0	14452704.0	14751101.0	15052184.0

266 rows × 67 columns

```
In [4]: df.head()
```

Out[4]:		Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962	1963	1964	1965	...	2013	2014	2015	2016	2017	2018
	0	Aruba	ABW	Population, total	SP.POP.TOTL	54608.0	55811.0	56682.0	57475.0	58178.0	58782.0	...	102880.0	103594.0	104257.0	104874.0	105439.0	105962.0
	1	Africa Eastern and Southern	AFE	Population, total	SP.POP.TOTL	130692579.0	134169237.0	137835590.0	141630546.0	145605995.0	149742351.0	...	567892149.0	583651101.0	600008424.0	616377605.0	632746570.0	649757148.0
	2	Afghanistan	AFG	Population, total	SP.POP.TOTL	8622466.0	8790140.0	8969047.0	9157465.0	9355514.0	9565147.0	...	31541209.0	32716210.0	33753499.0	34636207.0	35643418.0	36686784.0
	3	Africa Western and Central	AFW	Population, total	SP.POP.TOTL	97256290.0	99314028.0	101445032.0	103667517.0	105959979.0	108336203.0	...	387204553.0	397855507.0	408690375.0	419778384.0	431138704.0	442646825.0
	4	Angola	AGO	Population, total	SP.POP.TOTL	5357195.0	5441333.0	5521400.0	5599827.0	5673199.0	5736582.0	...	26147002.0	27128337.0	28127721.0	29154746.0	30208628.0	31273533.0

5 rows × 67 columns

In [5]: `df.tail()`

Out[5]:		Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962	1963	1964	1965	...	2013	2014	2015	2016	2017	2018	2019
	261	Kosovo	XKX	Population, total	SP.POP.TOTL	947000.0	966000.0	994000.0	1022000.0	1050000.0	1078000.0	...	1818117.0	1812771.0	1788196.0	1777557.0	1791003.0	1797085.0	1788878.0
	262	Yemen, Rep.	YEM	Population, total	SP.POP.TOTL	5542459.0	5646668.0	5753386.0	5860197.0	5973803.0	6097298.0	...	26984002.0	27753304.0	28516545.0	29274002.0	30034389.0	30790513.0	31546691.0
	263	South Africa	ZAF	Population, total	SP.POP.TOTL	16520441.0	16989464.0	17503133.0	18042215.0	18603097.0	19187194.0	...	53873616.0	54729551.0	55876504.0	56422274.0	56641209.0	57339635.0	58087055.0
	264	Zambia	ZMB	Population, total	SP.POP.TOTL	3119430.0	3219451.0	3323427.0	3431381.0	3542764.0	3658024.0	...	15234976.0	15737793.0	16248230.0	16767761.0	17298054.0	17835893.0	18380477.0
	265	Zimbabwe	ZWE	Population, total	SP.POP.TOTL	3806310.0	3925952.0	4049778.0	4177931.0	4310332.0	4447149.0	...	13555422.0	13855753.0	14154937.0	14452704.0	14751101.0	15052184.0	15354608.0

5 rows × 67 columns

In [6]: `df.shape`

Out[6]: (266, 67)

In [7]: `df.columns`

```
Out[7]: Index(['Country Name', 'Country Code', 'Indicator Name', 'Indicator Code',
   '1960', '1961', '1962', '1963', '1964', '1965', '1966', '1967', '1968',
   '1969', '1970', '1971', '1972', '1973', '1974', '1975', '1976', '1977',
   '1978', '1979', '1980', '1981', '1982', '1983', '1984', '1985', '1986',
   '1987', '1988', '1989', '1990', '1991', '1992', '1993', '1994', '1995',
   '1996', '1997', '1998', '1999', '2000', '2001', '2002', '2003', '2004',
   '2005', '2006', '2007', '2008', '2009', '2010', '2011', '2012', '2013',
   '2014', '2015', '2016', '2017', '2018', '2019', '2020', '2021', '2022'],
  dtype='object')
```

```
In [8]: df.dtypes
```

```
Out[8]: Country Name    object
Country Code     object
Indicator Name   object
Indicator Code   object
1960            float64
...
2018            float64
2019            float64
2020            float64
2021            float64
2022            float64
Length: 67, dtype: object
```

```
In [9]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 266 entries, 0 to 265
Data columns (total 67 columns):
 #   Column      Non-Null Count  Dtype  
 --- 
 0   Country Name    266 non-null   object  
 1   Country Code     266 non-null   object  
 2   Indicator Name   266 non-null   object  
 3   Indicator Code    266 non-null   object  
 4   1960            264 non-null   float64
 5   1961            264 non-null   float64
 6   1962            264 non-null   float64
 7   1963            264 non-null   float64
 8   1964            264 non-null   float64
 9   1965            264 non-null   float64
 10  1966            264 non-null   float64
 11  1967            264 non-null   float64
 12  1968            264 non-null   float64
 13  1969            264 non-null   float64
 14  1970            264 non-null   float64
 15  1971            264 non-null   float64
 16  1972            264 non-null   float64
 17  1973            264 non-null   float64
 18  1974            264 non-null   float64
 19  1975            264 non-null   float64
 20  1976            264 non-null   float64
 21  1977            264 non-null   float64
 22  1978            264 non-null   float64
 23  1979            264 non-null   float64
 24  1980            264 non-null   float64
 25  1981            264 non-null   float64
 26  1982            264 non-null   float64
 27  1983            264 non-null   float64
 28  1984            264 non-null   float64
 29  1985            264 non-null   float64
 30  1986            264 non-null   float64
 31  1987            264 non-null   float64
 32  1988            264 non-null   float64
 33  1989            264 non-null   float64
 34  1990            265 non-null   float64
 35  1991            265 non-null   float64
 36  1992            265 non-null   float64
 37  1993            265 non-null   float64
 38  1994            265 non-null   float64
 39  1995            265 non-null   float64
 40  1996            265 non-null   float64
 41  1997            265 non-null   float64
 42  1998            265 non-null   float64
 43  1999            265 non-null   float64
 44  2000            265 non-null   float64
 45  2001            265 non-null   float64
 46  2002            265 non-null   float64
 47  2003            265 non-null   float64
 48  2004            265 non-null   float64
 49  2005            265 non-null   float64
 50  2006            265 non-null   float64
```

```
51 2007      265 non-null   float64
52 2008      265 non-null   float64
53 2009      265 non-null   float64
54 2010      265 non-null   float64
55 2011      265 non-null   float64
56 2012      265 non-null   float64
57 2013      265 non-null   float64
58 2014      265 non-null   float64
59 2015      265 non-null   float64
60 2016      265 non-null   float64
61 2017      265 non-null   float64
62 2018      265 non-null   float64
63 2019      265 non-null   float64
64 2020      265 non-null   float64
65 2021      265 non-null   float64
66 2022      265 non-null   float64
dtypes: float64(63), object(4)
memory usage: 139.4+ KB
```

```
In [10]: df.describe()
```

```
Out[10]:
```

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	...	2013	2014	2015	2016
count	2.640000e+02	...	2.650000e+02	2.650000e+02	2.650000e+02	2.650000e+02									
mean	1.172712e+08	1.188807e+08	1.210511e+08	1.237333e+08	1.264378e+08	1.291813e+08	1.320404e+08	1.348980e+08	1.378358e+08	1.408789e+08	...	2.927787e+08	2.966774e+08	3.005462e+08	3.044051e+08
std	3.695439e+08	3.740897e+08	3.808061e+08	3.895039e+08	3.982439e+08	4.071153e+08	4.164504e+08	4.257424e+08	4.353218e+08	4.452927e+08	...	9.186849e+08	9.301446e+08	9.414558e+08	9.526720e+08
min	2.646000e+03	2.888000e+03	3.171000e+03	3.481000e+03	3.811000e+03	4.161000e+03	4.531000e+03	4.930000e+03	5.354000e+03	5.646000e+03	...	1.069400e+04	1.089900e+04	1.087700e+04	1.085200e+04
25%	5.132212e+05	5.231345e+05	5.337595e+05	5.449288e+05	5.566630e+05	5.651150e+05	5.691470e+05	5.773872e+05	5.832700e+05	5.875942e+05	...	1.697753e+06	1.743309e+06	1.788196e+06	1.777557e+06
50%	3.757486e+06	3.887144e+06	4.023896e+06	4.139356e+06	4.224612e+06	4.277636e+06	4.331825e+06	4.385700e+06	4.450934e+06	4.530800e+06	...	1.014958e+07	1.028212e+07	1.035808e+07	1.032545e+07
75%	2.670606e+07	2.748694e+07	2.830289e+07	2.914708e+07	3.001684e+07	3.084892e+07	3.163010e+07	3.209247e+07	3.249927e+07	3.277149e+07	...	6.023395e+07	6.078914e+07	6.073058e+07	6.062750e+07
max	3.031474e+09	3.072422e+09	3.126850e+09	3.193429e+09	3.260442e+09	3.328209e+09	3.398480e+09	3.468371e+09	3.540164e+09	3.614573e+09	...	7.229732e+09	7.317970e+09	7.405278e+09	7.492157e+09

8 rows × 63 columns

```
In [11]: df.duplicated().sum()
```

```
Out[11]: 0
```

```
In [12]: df.isna().sum().any()
```

```
Out[12]: True
```

```
In [13]: df = df.fillna(method = "ffill")
df.head()
```

Out[13]:		Country Name	Country Code	Indicator Name	Indicator Code	1960	1961	1962	1963	1964	1965	...	2013	2014	2015	2016	2017	2018
	0	Aruba	ABW	Population, total	SP.POP.TOTL	54608.0	55811.0	56682.0	57475.0	58178.0	58782.0	...	102880.0	103594.0	104257.0	104874.0	105439.0	105962.0
	1	Africa Eastern and Southern	AFE	Population, total	SP.POP.TOTL	130692579.0	134169237.0	137835590.0	141630546.0	145605995.0	149742351.0	...	567892149.0	583651101.0	600008424.0	616377605.0	632746570.0	649757148.0
	2	Afghanistan	AFG	Population, total	SP.POP.TOTL	8622466.0	8790140.0	8969047.0	9157465.0	9355514.0	9565147.0	...	31541209.0	32716210.0	33753499.0	34636207.0	35643418.0	36686784.0
	3	Africa Western and Central	AFW	Population, total	SP.POP.TOTL	97256290.0	99314028.0	101445032.0	103667517.0	105959979.0	108336203.0	...	387204553.0	397855507.0	408690375.0	419778384.0	431138704.0	442646825.0
	4	Angola	AGO	Population, total	SP.POP.TOTL	5357195.0	5441333.0	5521400.0	5599827.0	5673199.0	5736582.0	...	26147002.0	27128337.0	28127721.0	29154746.0	30208628.0	31273533.0

5 rows × 67 columns

In [14]: `df.isna().sum().any()`

Out[14]: False

In [15]: `df['Country Name'].unique()`

```
Out[15]: array(['Aruba', 'Africa Eastern and Southern', 'Afghanistan',
   'Africa Western and Central', 'Angola', 'Albania', 'Andorra',
   'Arab World', 'United Arab Emirates', 'Argentina', 'Armenia',
   'American Samoa', 'Antigua and Barbuda', 'Australia', 'Austria',
   'Azerbaijan', 'Burundi', 'Belgium', 'Benin', 'Burkina Faso',
   'Bangladesh', 'Bulgaria', 'Bahrain', 'Bahamas, The',
   'Bosnia and Herzegovina', 'Belarus', 'Belize', 'Bermuda',
   'Bolivia', 'Brazil', 'Barbados', 'Brunei Darussalam', 'Bhutan',
   'Botswana', 'Central African Republic', 'Canada',
   'Central Europe and the Baltics', 'Switzerland', 'Channel Islands',
   'Chile', 'China', "Cote d'Ivoire", 'Cameroon', 'Congo, Dem. Rep.',
   'Congo, Rep.', 'Colombia', 'Comoros', 'Cabo Verde', 'Costa Rica',
   'Caribbean small states', 'Cuba', 'Curacao', 'Cayman Islands',
   'Cyprus', 'Czechia', 'Germany', 'Djibouti', 'Dominica', 'Denmark',
   'Dominican Republic', 'Algeria',
   'East Asia & Pacific (excluding high income)',
   'Early-demographic dividend', 'East Asia & Pacific',
   'Europe & Central Asia (excluding high income)',
   'Europe & Central Asia', 'Ecuador', 'Egypt, Arab Rep.',
   'Euro area', 'Eritrea', 'Spain', 'Estonia', 'Ethiopia',
   'European Union', 'Fragile and conflict affected situations',
   'Finland', 'Fiji', 'France', 'Faroe Islands',
   'Micronesia, Fed. Sts.', 'Gabon', 'United Kingdom', 'Georgia',
   'Ghana', 'Gibraltar', 'Guinea', 'Gambia, The', 'Guinea-Bissau',
   'Equatorial Guinea', 'Greece', 'Grenada', 'Greenland', 'Guatemala',
   'Guam', 'Guyana', 'High income', 'Hong Kong SAR, China',
   'Honduras', 'Heavily indebted poor countries (HIPC)', 'Croatia',
   'Haiti', 'Hungary', 'IBRD only', 'IDA & IBRD total', 'IDA total',
   'IDA blend', 'Indonesia', 'IDA only', 'Isle of Man', 'India',
   'Not classified', 'Ireland', 'Iran, Islamic Rep.', 'Iraq',
   'Iceland', 'Israel', 'Italy', 'Jamaica', 'Jordan', 'Japan',
   'Kazakhstan', 'Kenya', 'Kyrgyz Republic', 'Cambodia', 'Kiribati',
   'St. Kitts and Nevis', 'Korea, Rep.', 'Kuwait',
   'Latin America & Caribbean (excluding high income)', 'Lao PDR',
   'Lebanon', 'Liberia', 'Libya', 'St. Lucia',
   'Latin America & Caribbean',
   'Least developed countries: UN classification', 'Low income',
   'Liechtenstein', 'Sri Lanka', 'Lower middle income',
   'Low & middle income', 'Lesotho', 'Late-demographic dividend',
   'Lithuania', 'Luxembourg', 'Latvia', 'Macao SAR, China',
   'St. Martin (French part)', 'Morocco', 'Monaco', 'Moldova',
   'Madagascar', 'Maldives', 'Middle East & North Africa', 'Mexico',
   'Marshall Islands', 'Middle income', 'North Macedonia', 'Mali',
   'Malta', 'Myanmar',
   'Middle East & North Africa (excluding high income)', 'Montenegro',
   'Mongolia', 'Northern Mariana Islands', 'Mozambique', 'Mauritania',
   'Mauritius', 'Malawi', 'Malaysia', 'North America', 'Namibia',
   'New Caledonia', 'Niger', 'Nigeria', 'Nicaragua', 'Netherlands',
   'Norway', 'Nepal', 'Nauru', 'New Zealand', 'OECD members', 'Oman',
   'Other small states', 'Pakistan', 'Panama', 'Peru', 'Philippines',
   'Palau', 'Papua New Guinea', 'Poland', 'Pre-demographic dividend',
   'Puerto Rico', "Korea, Dem. People's Rep.", 'Portugal', 'Paraguay',
   'West Bank and Gaza', 'Pacific island small states',
   'Post-demographic dividend', 'French Polynesia', 'Qatar',
   'Romania', 'Russian Federation', 'Rwanda', 'South Asia',
   'Saudi Arabia', 'Sudan', 'Senegal', 'Singapore', 'Solomon Islands',
```

```
'Sierra Leone', 'El Salvador', 'San Marino', 'Somalia', 'Serbia',
'Sub-Saharan Africa (excluding high income)', 'South Sudan',
'Sub-Saharan Africa', 'Small states', 'Sao Tome and Principe',
'Suriname', 'Slovak Republic', 'Slovenia', 'Sweden', 'Eswatini',
'Sint Maarten (Dutch part)', 'Seychelles', 'Syrian Arab Republic',
'Turks and Caicos Islands', 'Chad',
'East Asia & Pacific (IDA & IBRD countries)',
'Europe & Central Asia (IDA & IBRD countries)', 'Togo', 'Thailand',
'Tajikistan', 'Turkmenistan',
'Latin America & the Caribbean (IDA & IBRD countries)',
'Timor-Leste', 'Middle East & North Africa (IDA & IBRD countries)',
'Tonga', 'South Asia (IDA & IBRD)',
'Sub-Saharan Africa (IDA & IBRD countries)', 'Trinidad and Tobago',
'Tunisia', 'Turkiye', 'Tuvalu', 'Tanzania', 'Uganda', 'Ukraine',
'Upper middle income', 'Uruguay', 'United States', 'Uzbekistan',
'St. Vincent and the Grenadines', 'Venezuela, RB',
'British Virgin Islands', 'Virgin Islands (U.S.)', 'Vietnam',
'Vanuatu', 'World', 'Samoa', 'Kosovo', 'Yemen, Rep.',
'South Africa', 'Zambia', 'Zimbabwe'], dtype=object)
```

```
In [16]: df['Country Code'].unique()
```

```
Out[16]: array(['ABW', 'AFE', 'AFG', 'AFW', 'AGO', 'ALB', 'AND', 'ARB', 'ARE',
    'ARG', 'ARM', 'ASM', 'ATG', 'AUS', 'AUT', 'AZE', 'BDI', 'BEL',
    'BEN', 'BFA', 'BGD', 'BGR', 'BHR', 'BHS', 'BIH', 'BLR', 'BLZ',
    'BMU', 'BOL', 'BRA', 'BRB', 'BRN', 'BTN', 'BWA', 'CAF', 'CAN',
    'CEB', 'CHE', 'CHI', 'CHL', 'CHN', 'CIV', 'CMR', 'COD', 'COG',
    'COL', 'COM', 'CPV', 'CRI', 'CSS', 'CUB', 'CUW', 'CYM', 'CYP',
    'CZE', 'DEU', 'DJI', 'DMA', 'DNK', 'DOM', 'DZA', 'EAP', 'EAR',
    'EAS', 'ECA', 'ECS', 'ECU', 'EGY', 'EMU', 'ERI', 'ESP', 'EST',
    'ETH', 'EUU', 'FCS', 'FIN', 'FJI', 'FRA', 'FRO', 'FSM', 'GAB',
    'GBR', 'GEO', 'GHA', 'GIB', 'GIN', 'GMB', 'GNB', 'GNQ', 'GRC',
    'GRD', 'GRL', 'GTM', 'GUM', 'GUY', 'HIC', 'HKG', 'HND', 'HPC',
    'HRV', 'HTI', 'HUN', 'IBD', 'IBT', 'IDA', 'IDB', 'IDN', 'IDX',
    'IMN', 'IND', 'INX', 'IRL', 'IRN', 'IRQ', 'ISL', 'ISR', 'ITA',
    'JAM', 'JOR', 'JPN', 'KAZ', 'KEN', 'KGZ', 'KHM', 'KIR', 'KNA',
    'KOR', 'KWT', 'LAC', 'LAO', 'LBN', 'LBR', 'LBY', 'LCA', 'LCN',
    'LDC', 'LIC', 'LIE', 'LKA', 'LMC', 'LML', 'LSO', 'LTE', 'LTU',
    'LUX', 'LVA', 'MAC', 'MAF', 'MAR', 'MCO', 'MDA', 'MDG', 'MDV',
    'MEA', 'MEX', 'MHL', 'MIC', 'MKD', 'MLI', 'MLT', 'MMR', 'MNA',
    'MNE', 'MNG', 'MNP', 'MOZ', 'MRT', 'MUS', 'MWI', 'MYS', 'NAC',
    'NAM', 'NCL', 'NER', 'NGA', 'NIC', 'NLD', 'NOR', 'NPL', 'NRU',
    'NZL', 'OED', 'OMN', 'OSS', 'PAK', 'PAN', 'PER', 'PHL', 'PLW',
    'PNG', 'POL', 'PRE', 'PRI', 'PRK', 'PRT', 'PRY', 'PSE', 'PSS',
    'PST', 'PYF', 'QAT', 'ROU', 'RUS', 'RWA', 'SAS', 'SAU', 'SDN',
    'SEN', 'SGP', 'SLB', 'SLE', 'SLV', 'SMR', 'SOM', 'SRB', 'SSA',
    'SSD', 'SSF', 'SST', 'STP', 'SUR', 'SVK', 'SVN', 'SWE', 'SWZ',
    'SXM', 'SYC', 'SYR', 'TCA', 'TCD', 'TEA', 'TEC', 'TGO', 'THA',
    'TJK', 'TKM', 'TLA', 'TLS', 'TMN', 'TON', 'TSA', 'TSS', 'TTO',
    'TUN', 'TUR', 'TUV', 'TZA', 'UGA', 'UKR', 'UMC', 'URY', 'USA',
    'UZB', 'VCT', 'VEN', 'VGB', 'VIR', 'VNM', 'VUT', 'WLD', 'WSM',
    'XKX', 'YEM', 'ZAF', 'ZMB', 'ZWE'], dtype=object)
```

```
In [17]: df['Indicator Name'].unique()
```

```
Out[17]: array(['Population', 'total'], dtype=object)
```

```
In [18]: df['Indicator Code'].unique()
```

```
Out[18]: array(['SP.POP.TOTL'], dtype=object)
```

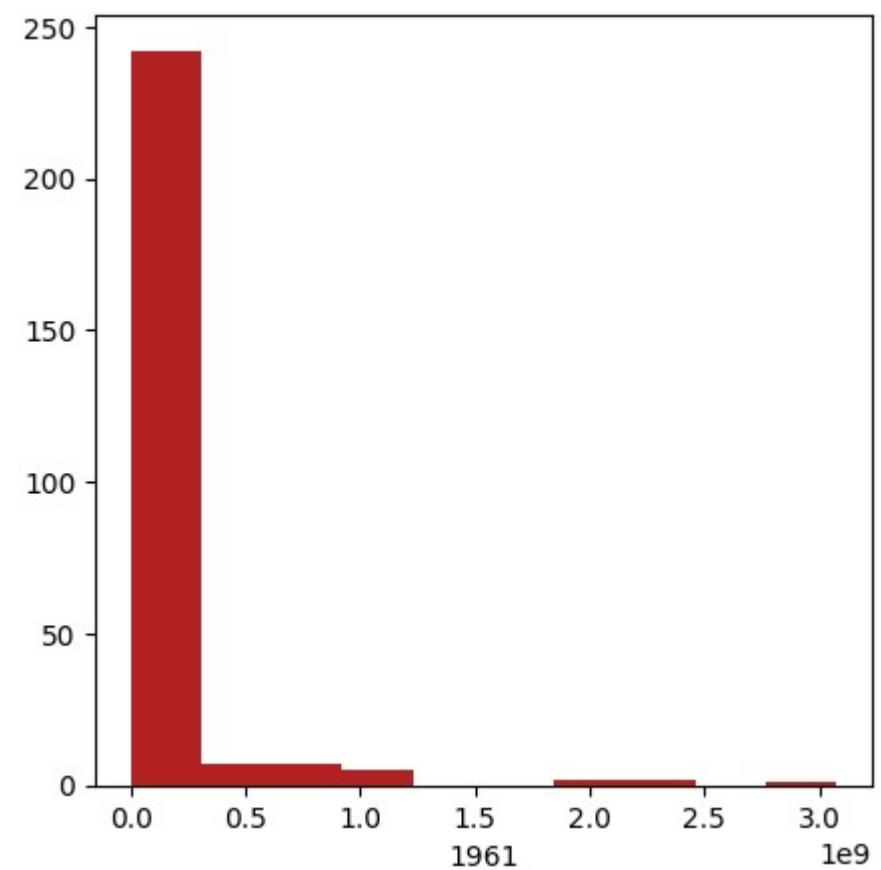
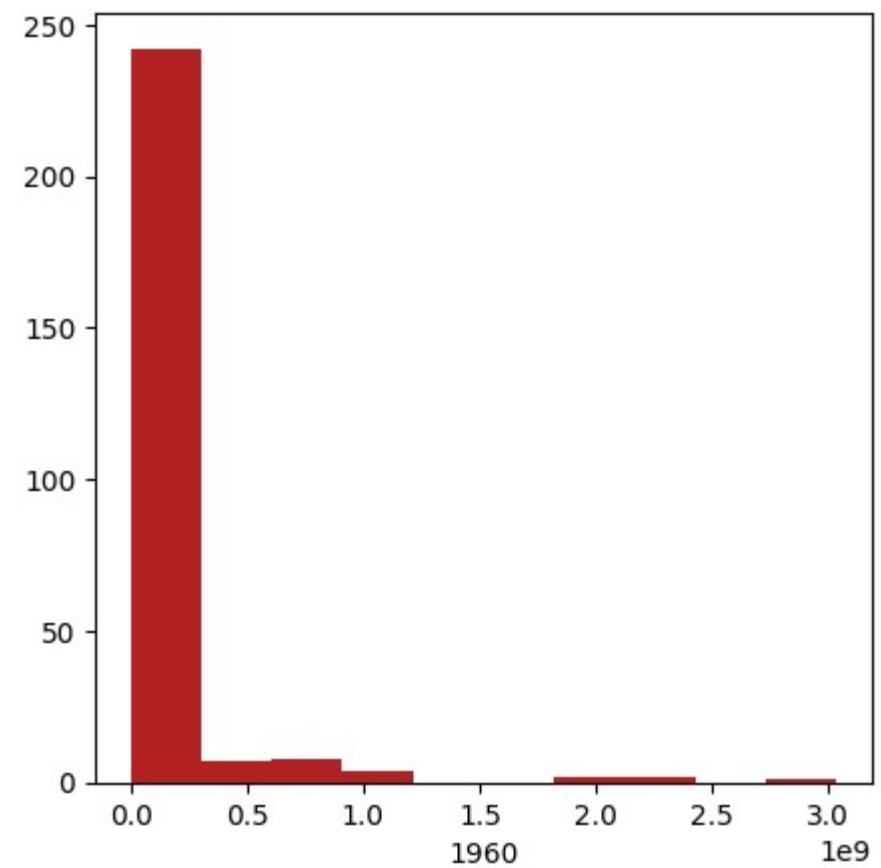
```
In [19]: df.drop(['Indicator Name','Indicator Code','Country Code'],axis = 1, inplace = True)
```

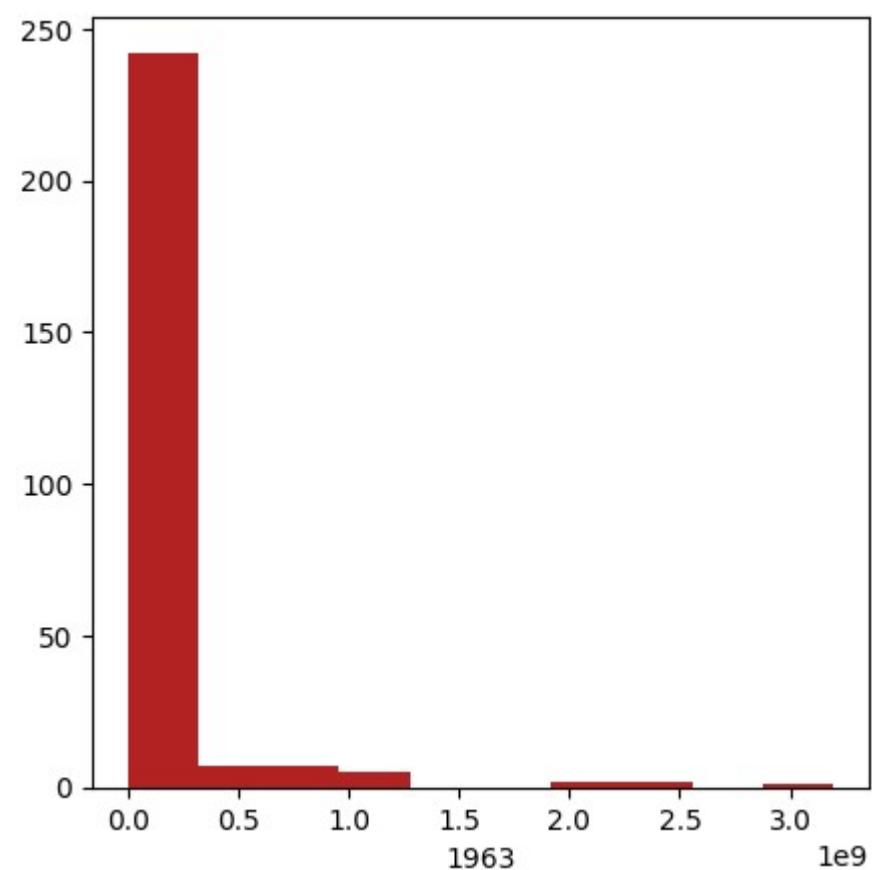
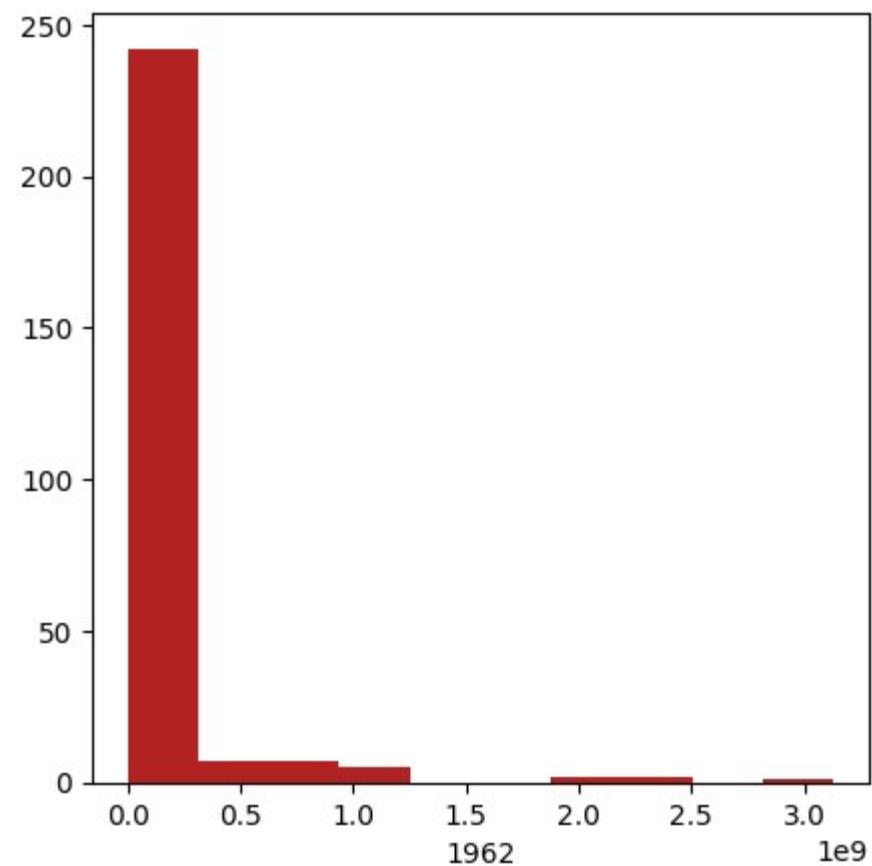
```
In [20]: df.columns
```

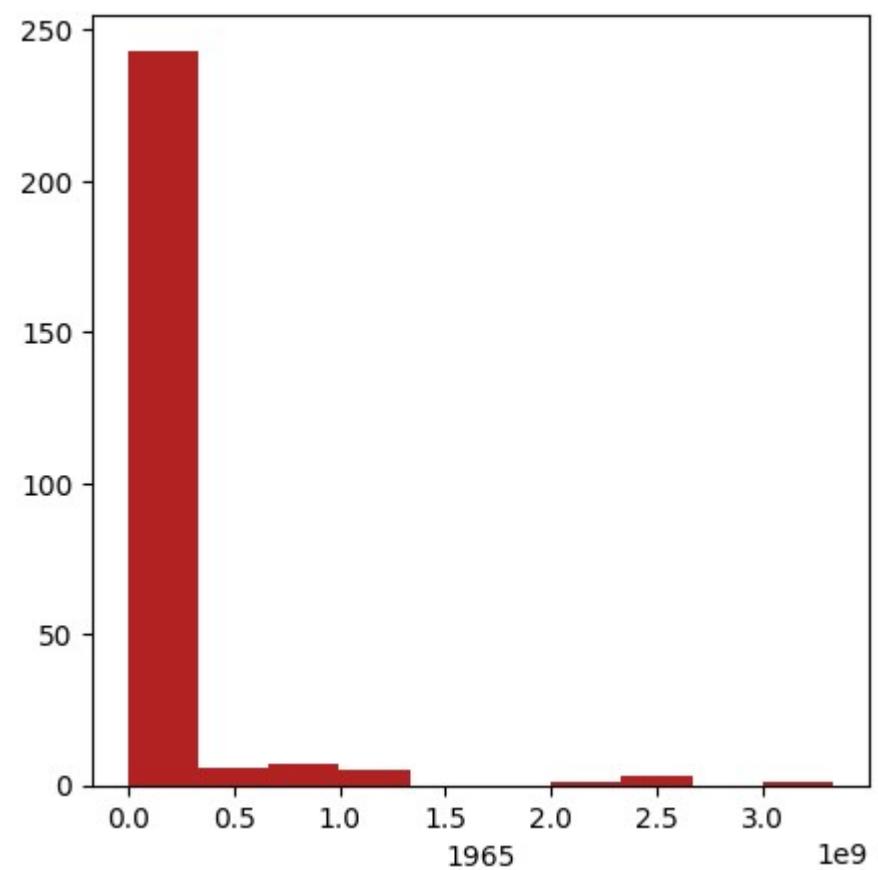
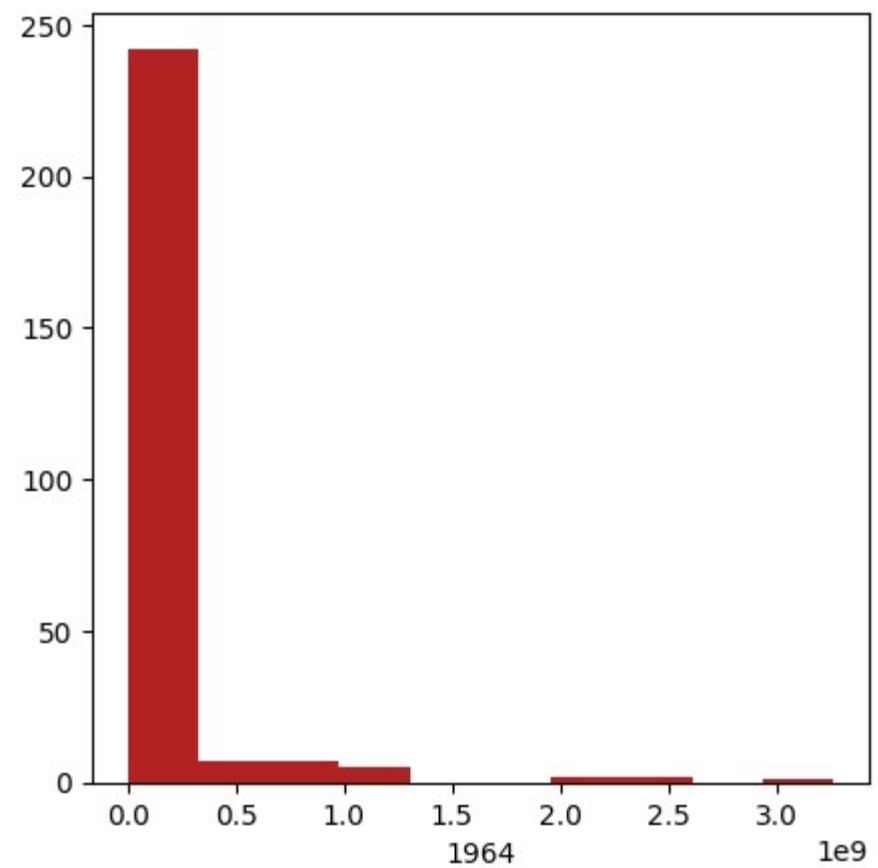
```
Out[20]: Index(['Country Name', '1960', '1961', '1962', '1963', '1964', '1965', '1966',
 '1967', '1968', '1969', '1970', '1971', '1972', '1973', '1974', '1975',
 '1976', '1977', '1978', '1979', '1980', '1981', '1982', '1983', '1984',
 '1985', '1986', '1987', '1988', '1989', '1990', '1991', '1992', '1993',
 '1994', '1995', '1996', '1997', '1998', '1999', '2000', '2001', '2002',
 '2003', '2004', '2005', '2006', '2007', '2008', '2009', '2010', '2011',
 '2012', '2013', '2014', '2015', '2016', '2017', '2018', '2019', '2020',
 '2021', '2022'],
 dtype='object')
```

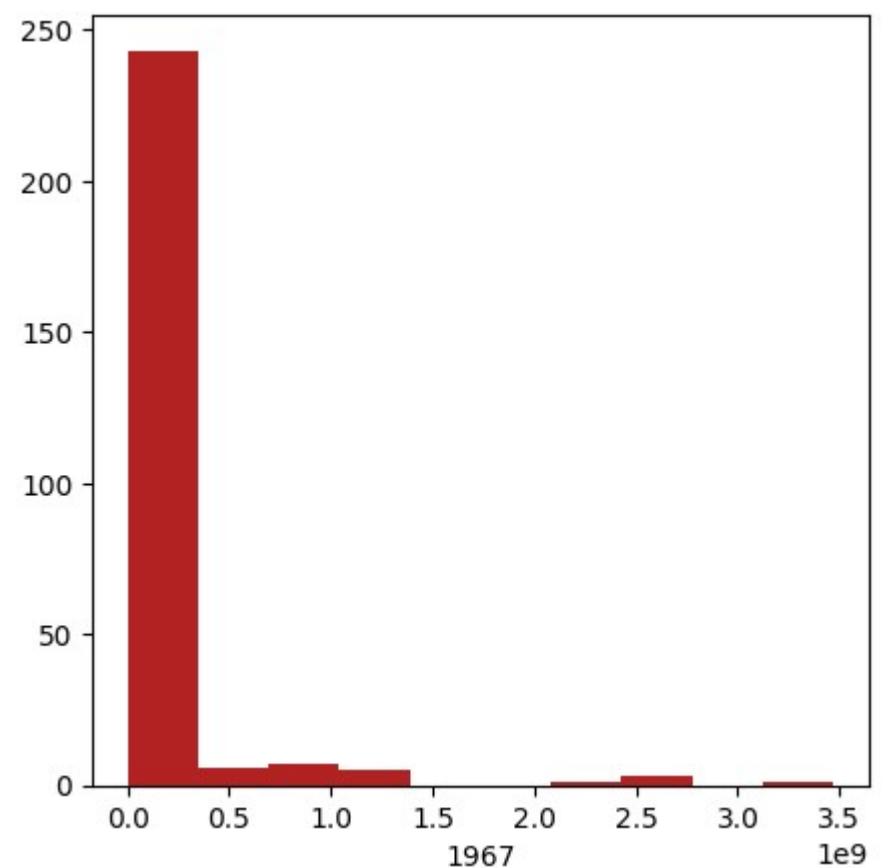
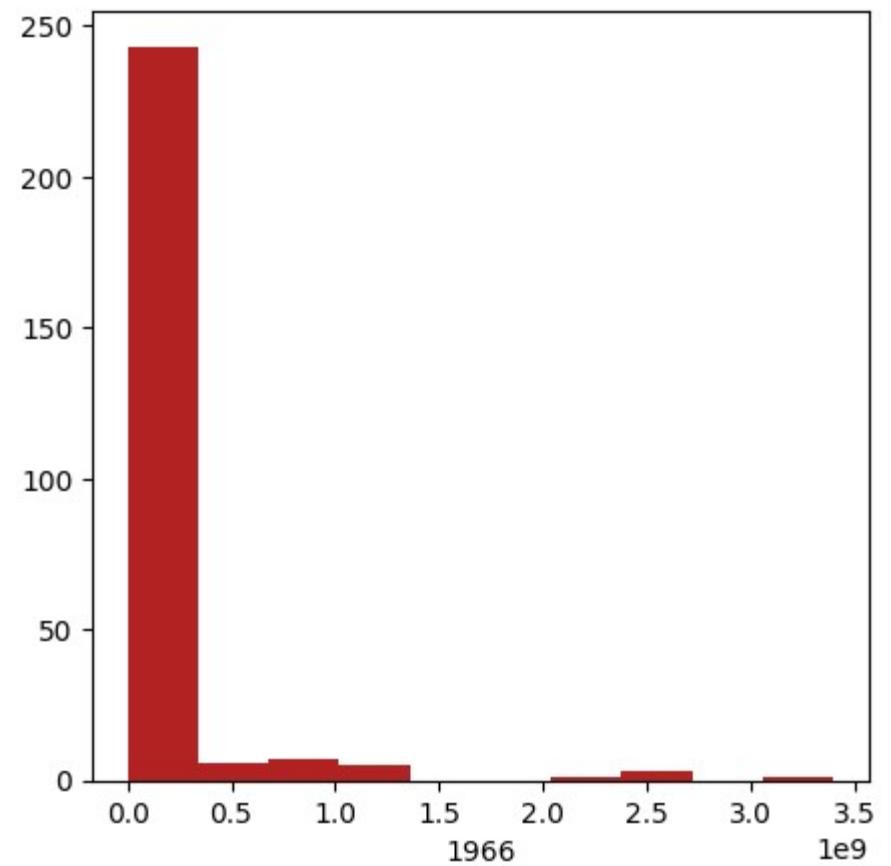
```
In [21]: cols = ['1960', '1961', '1962', '1963', '1964', '1965', '1966',
 '1967', '1968', '1969', '1970', '1971', '1972', '1973', '1974', '1975',
 '1976', '1977', '1978', '1979', '1980', '1981', '1982', '1983', '1984',
 '1985', '1986', '1987', '1988', '1989', '1990', '1991', '1992', '1993',
 '1994', '1995', '1996', '1997', '1998', '1999', '2000', '2001', '2002',
 '2003', '2004', '2005', '2006', '2007', '2008', '2009', '2010', '2011',
 '2012', '2013', '2014', '2015', '2016', '2017', '2018', '2019', '2020',
 '2021', '2022']
```

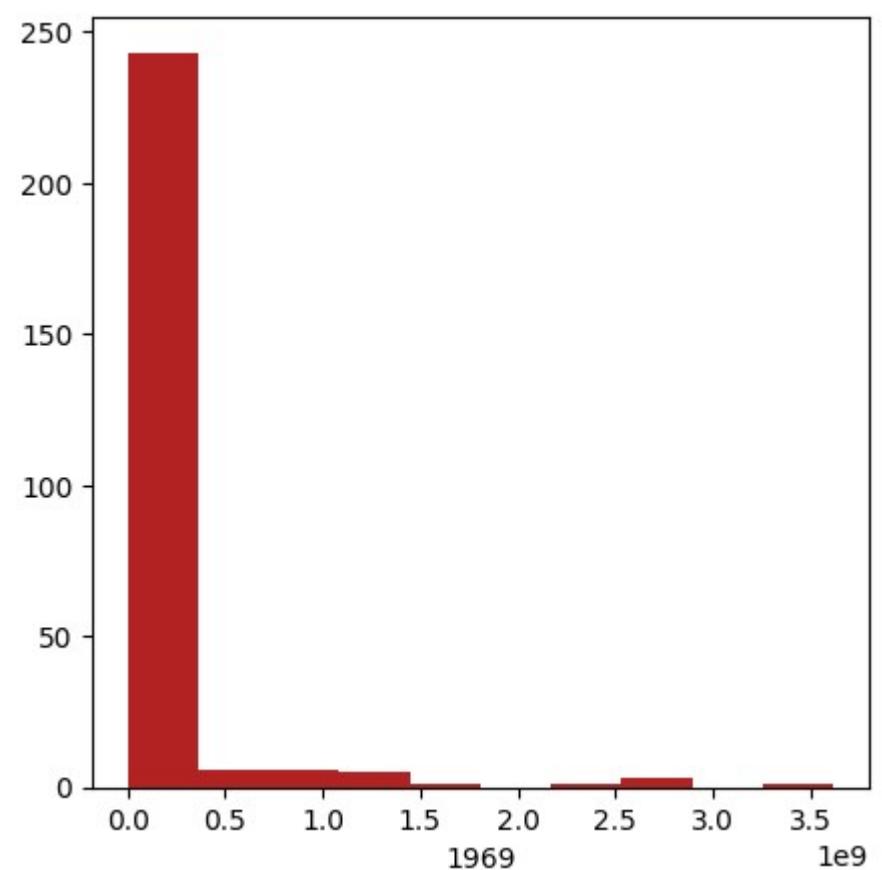
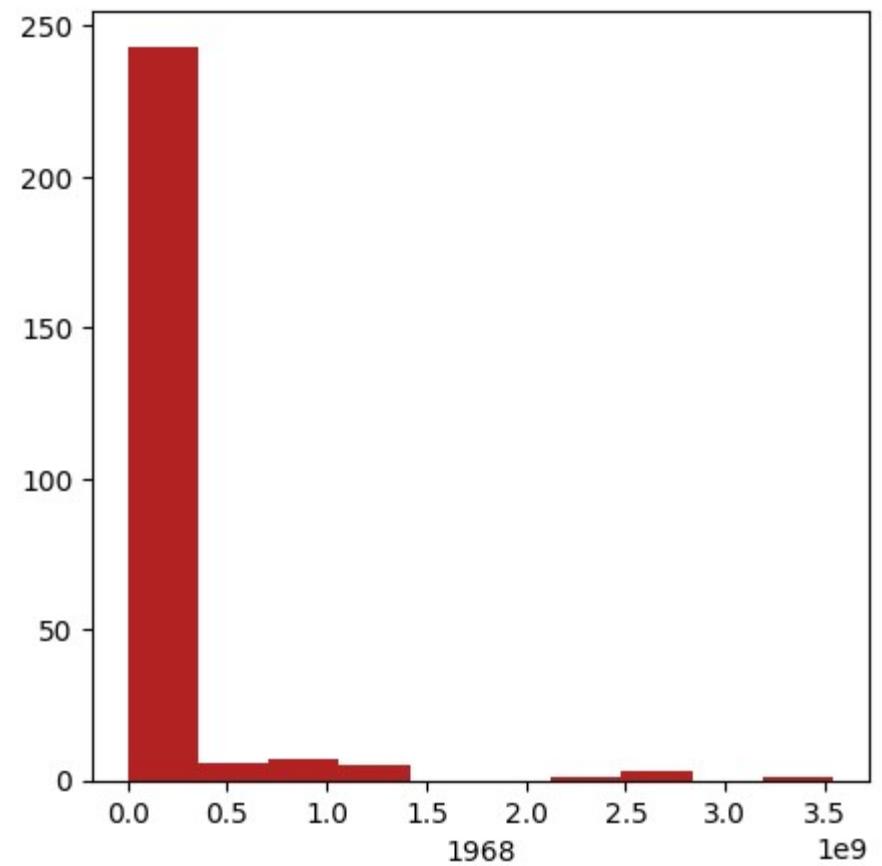
```
In [22]: for i in cols:
    fig = plt.figure(figsize=(5,5))
    plt.hist(df[i],color="#B22222",bins=10)
    plt.xlabel(i)
    plt.show()
```

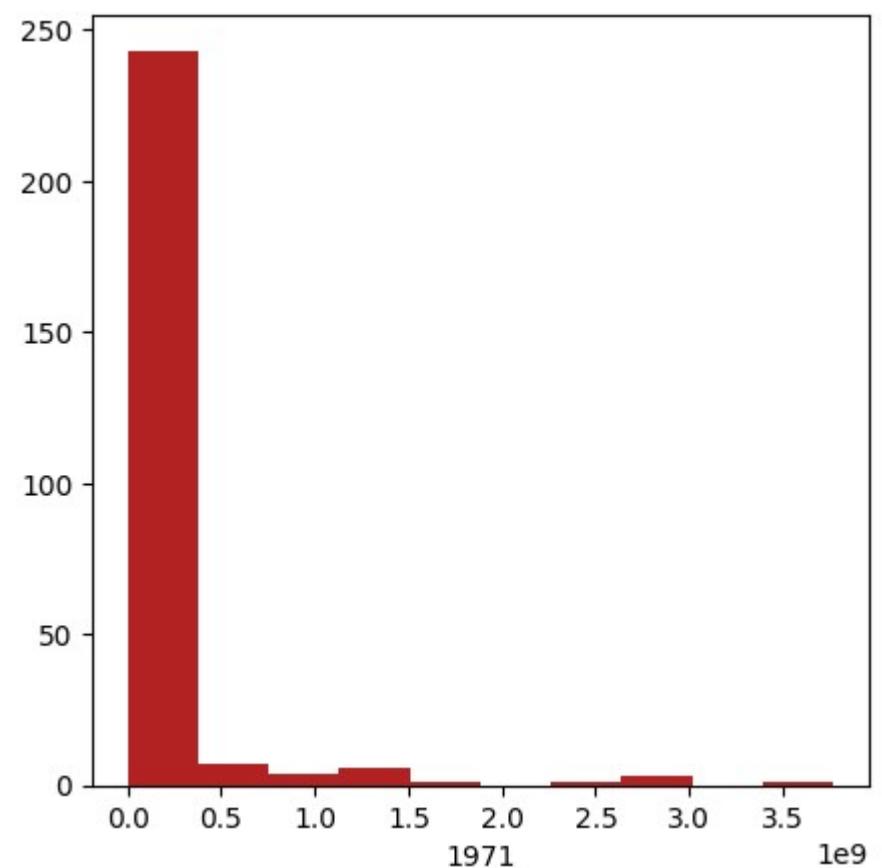
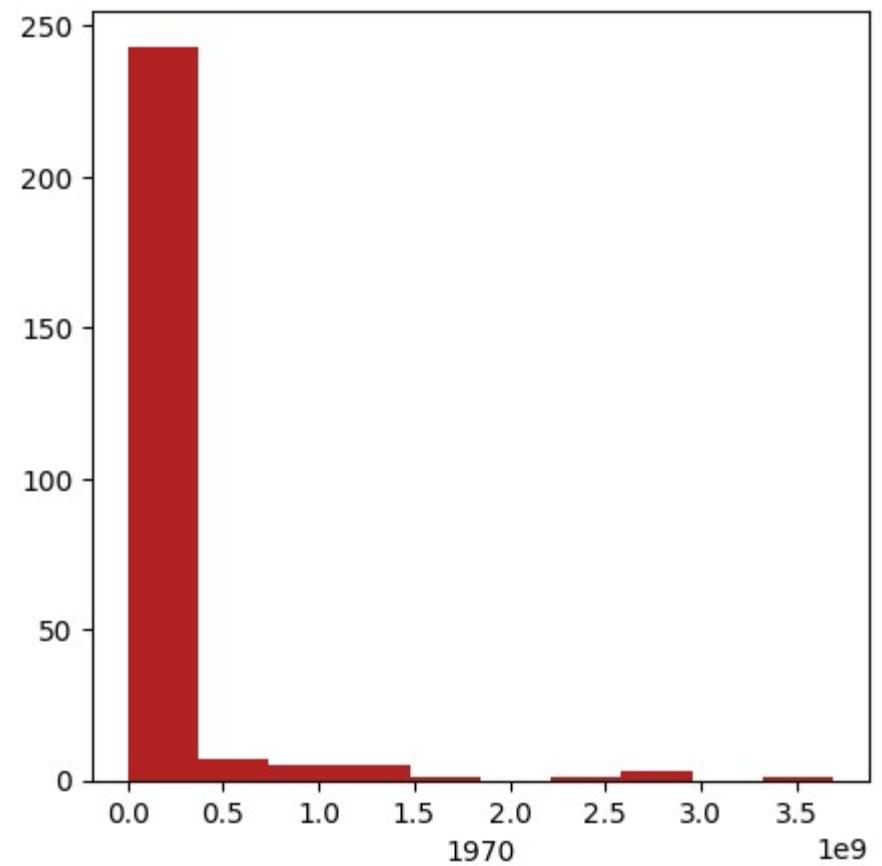


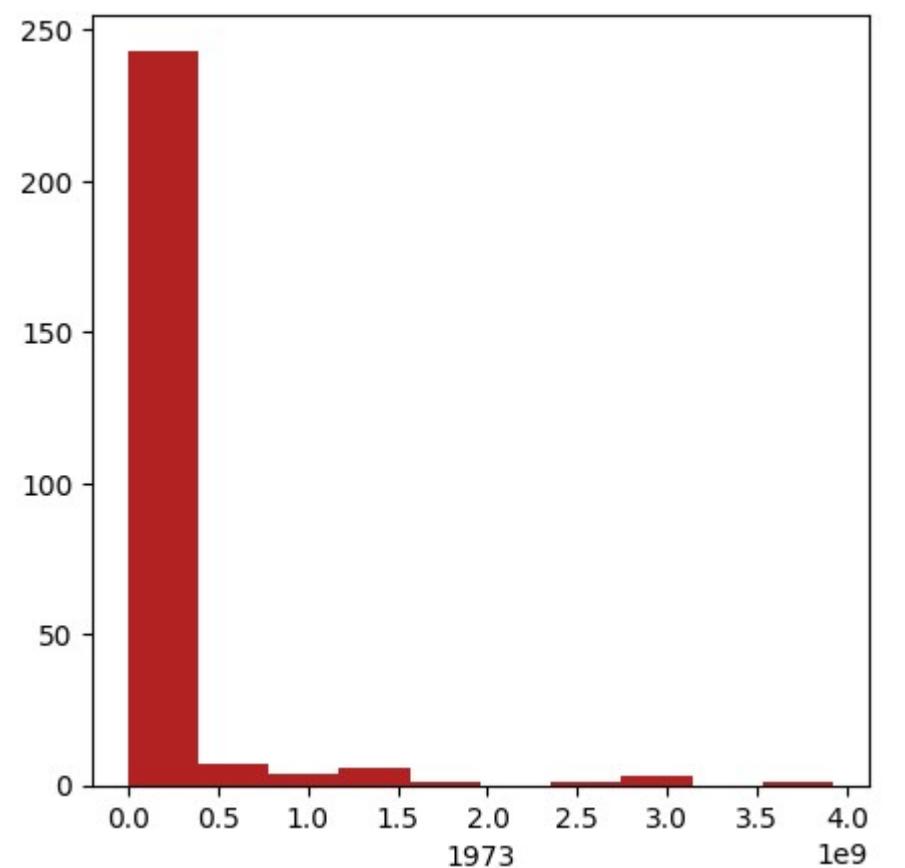
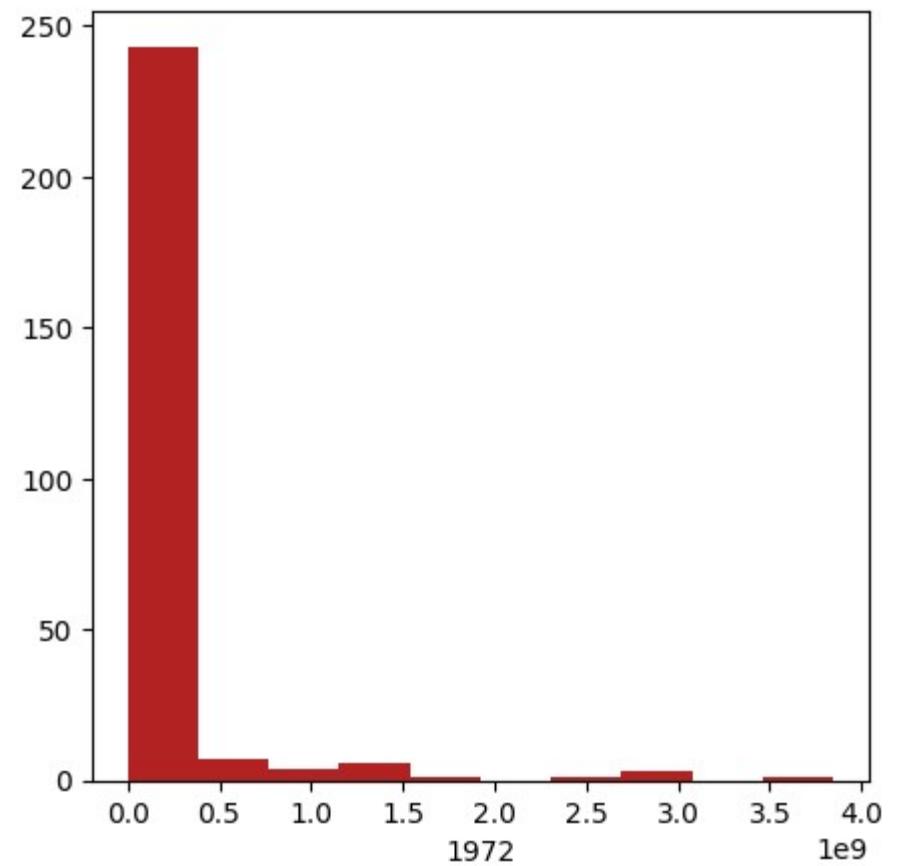


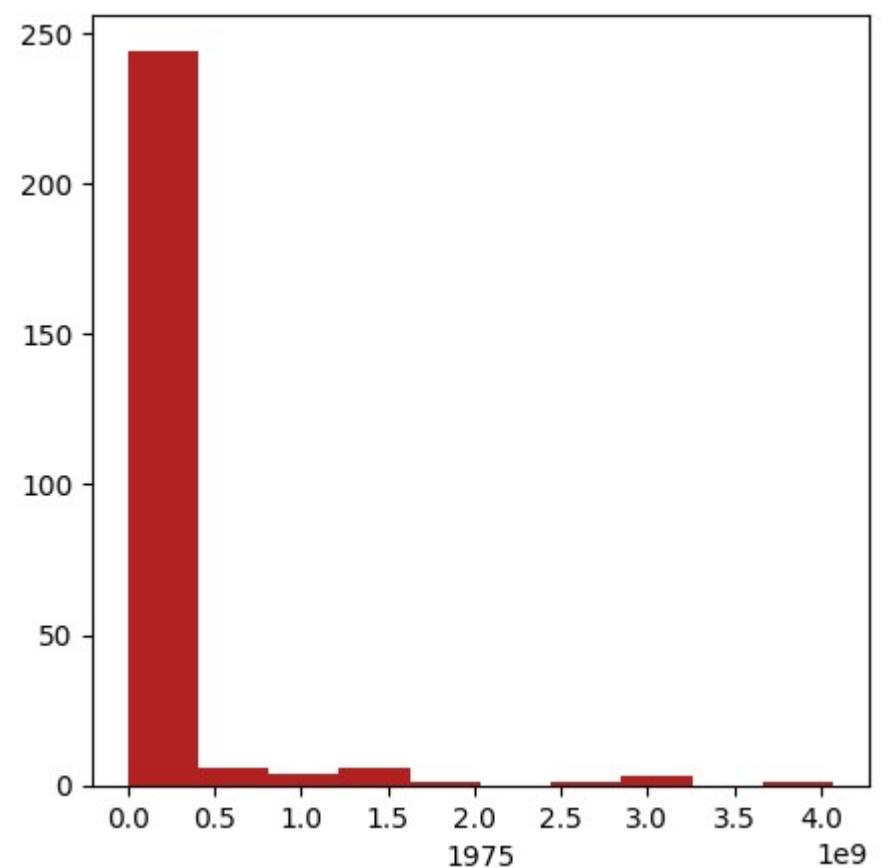
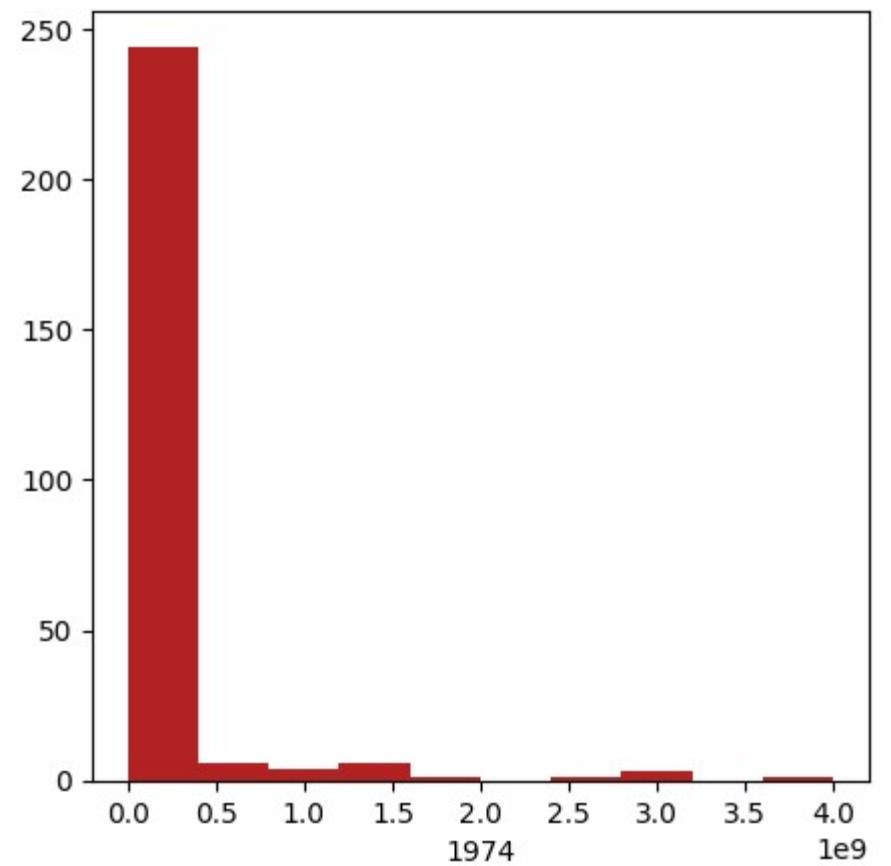


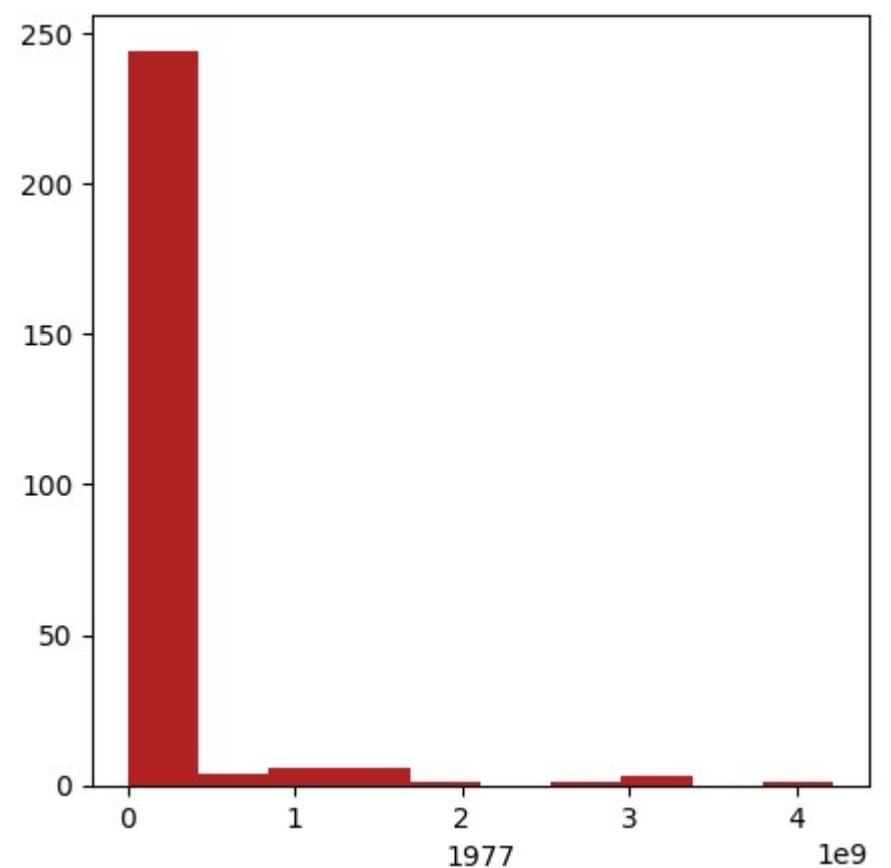
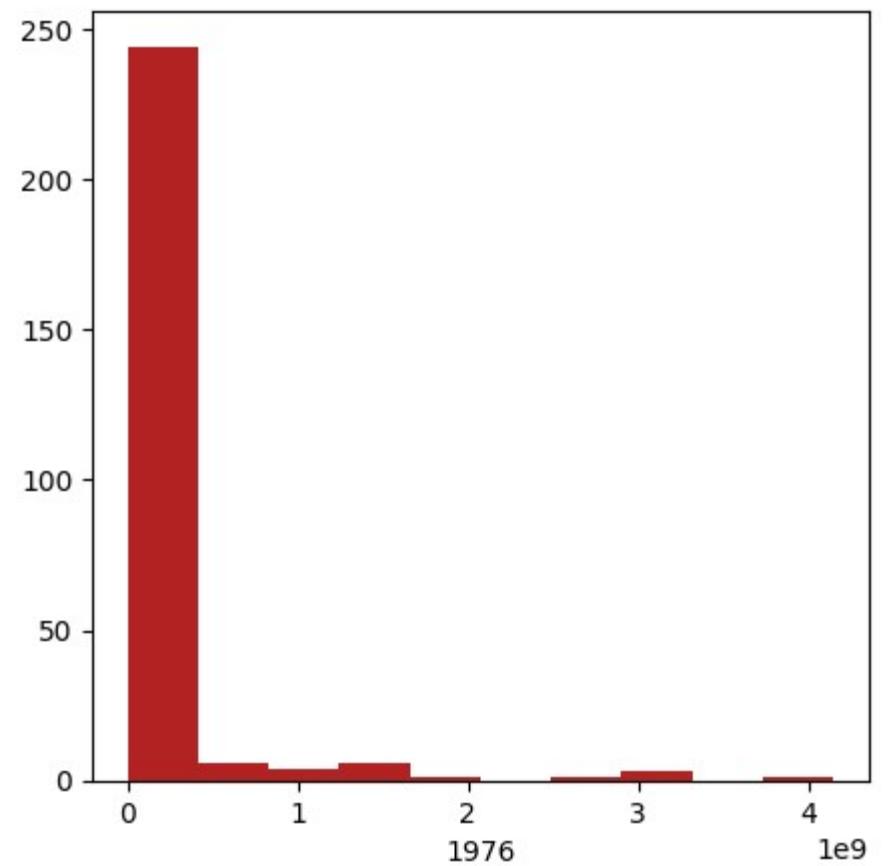


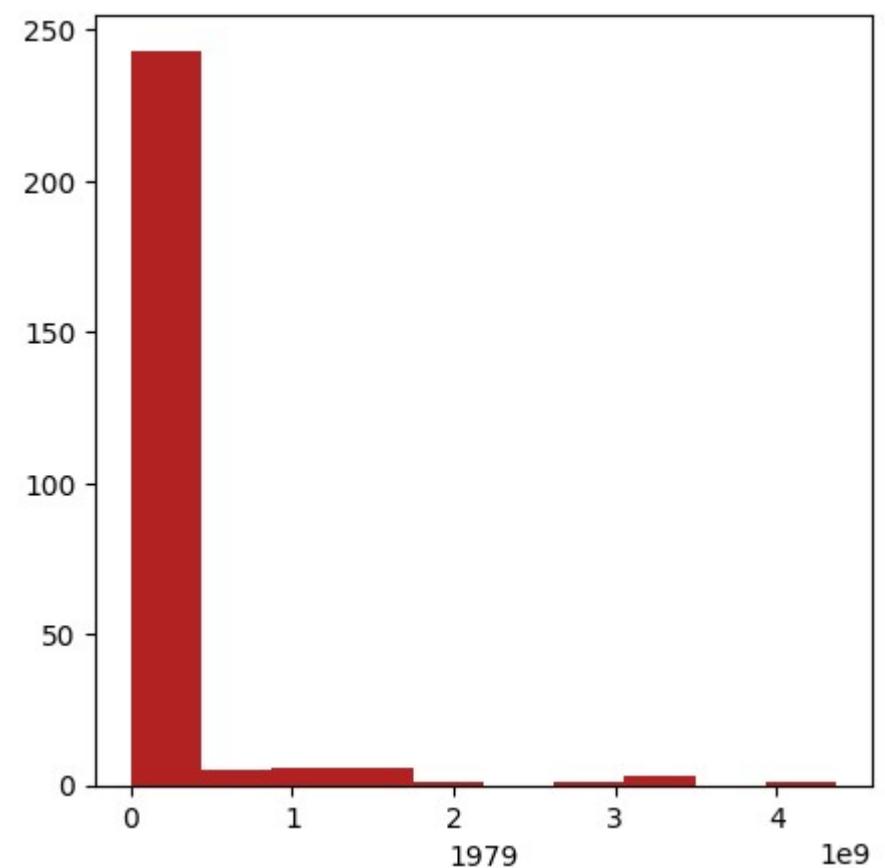
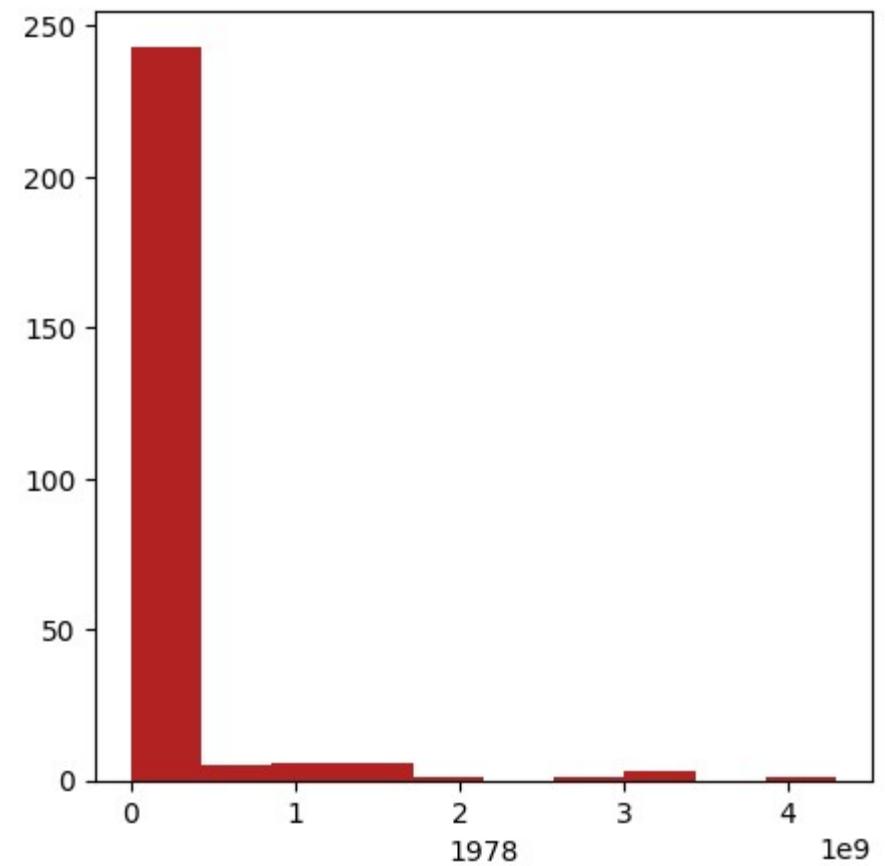


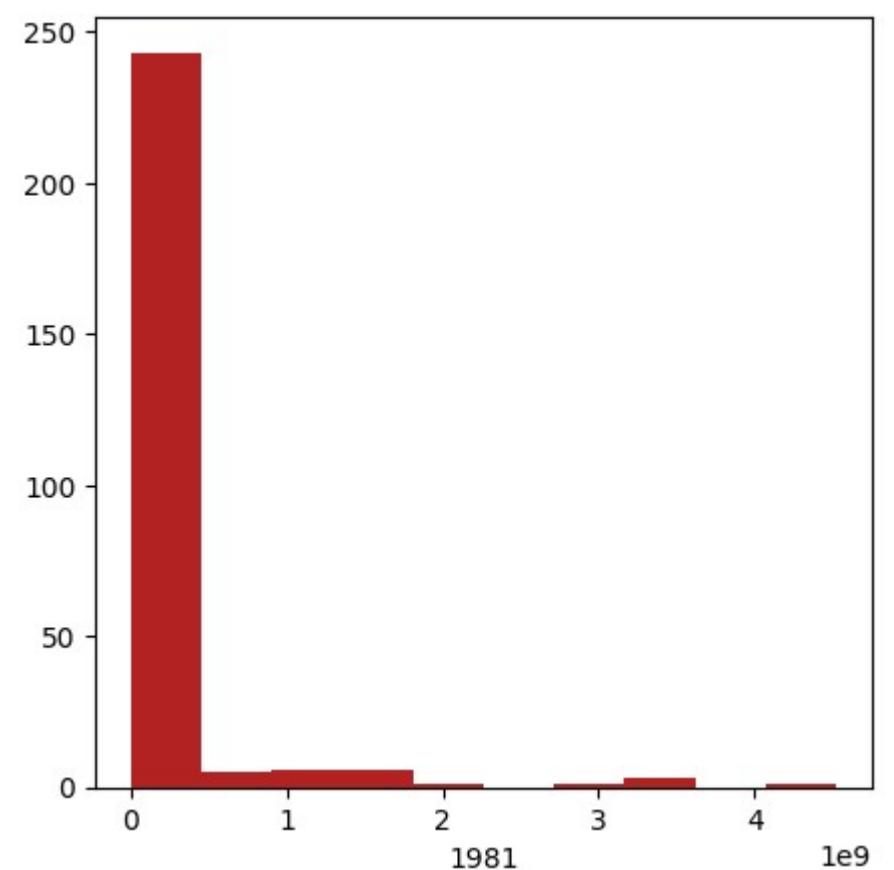
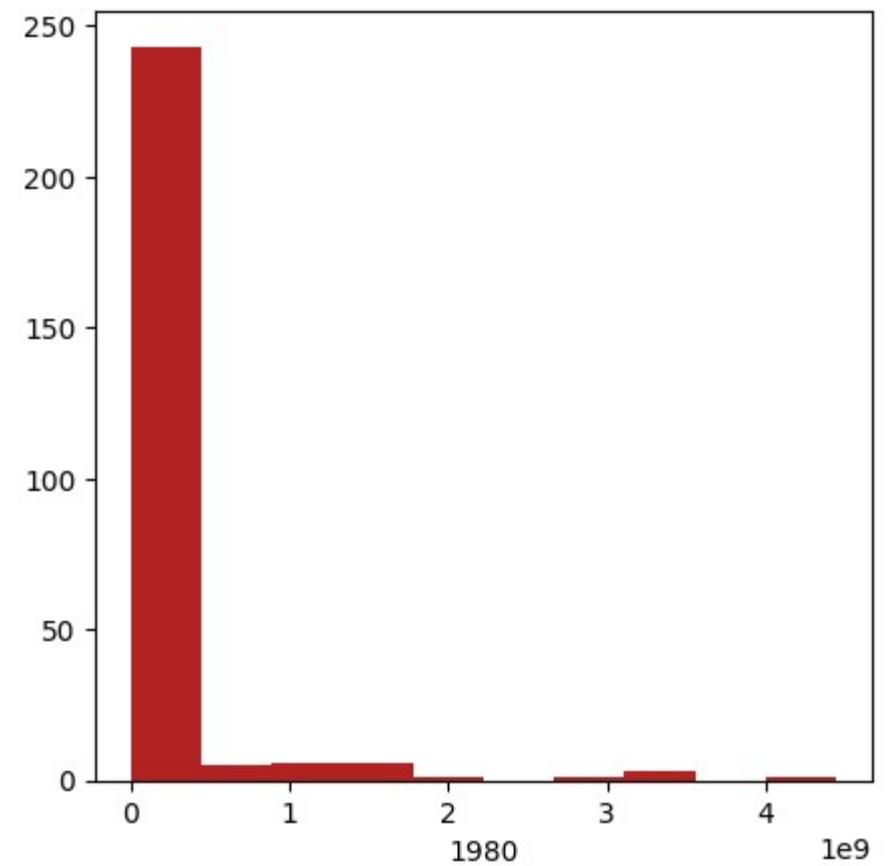


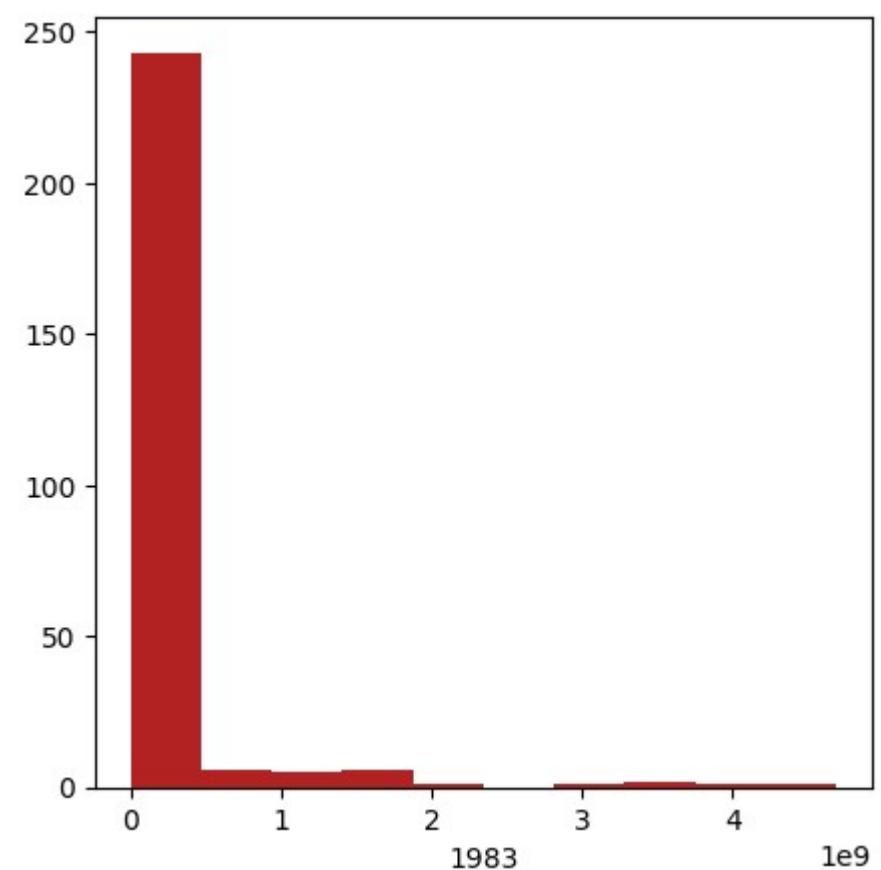
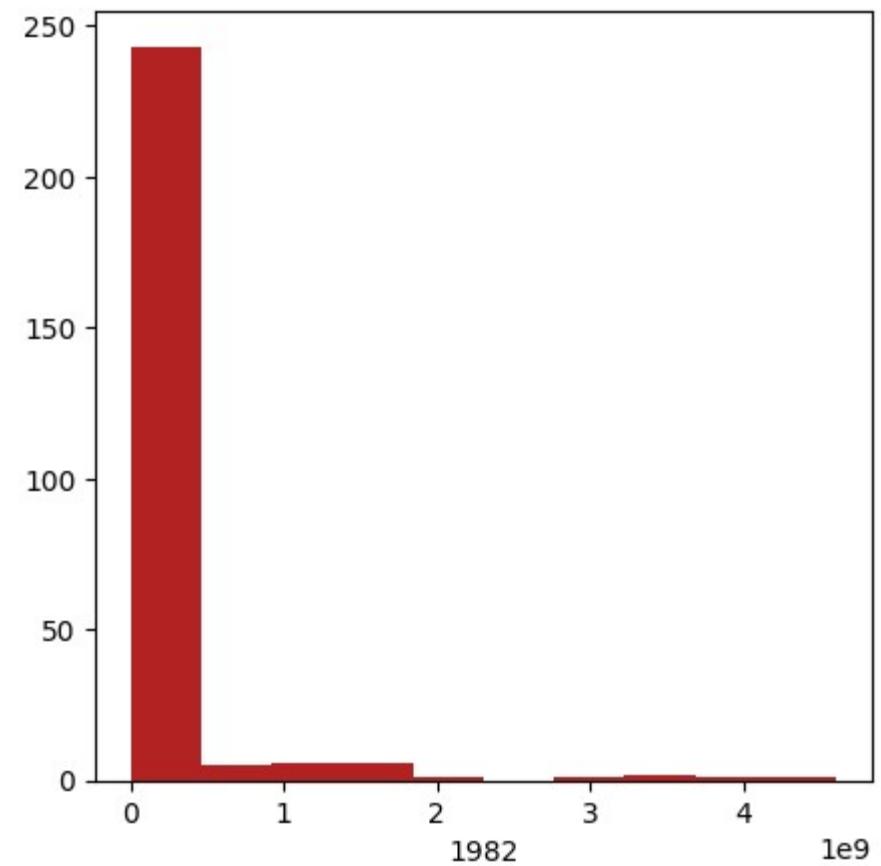


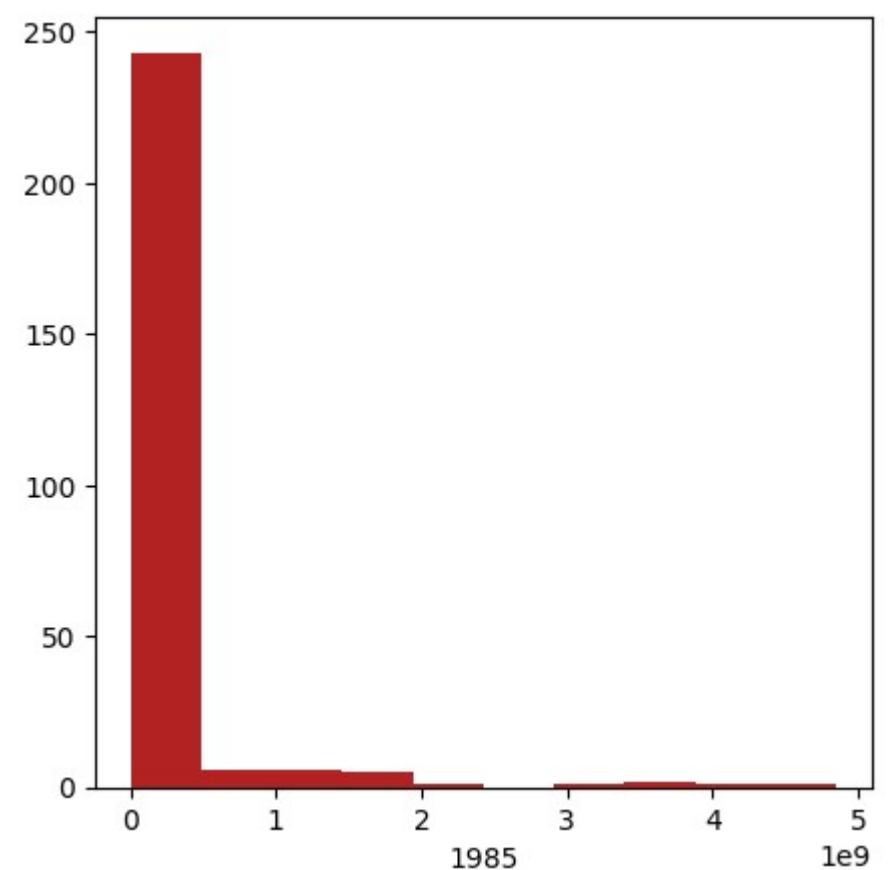
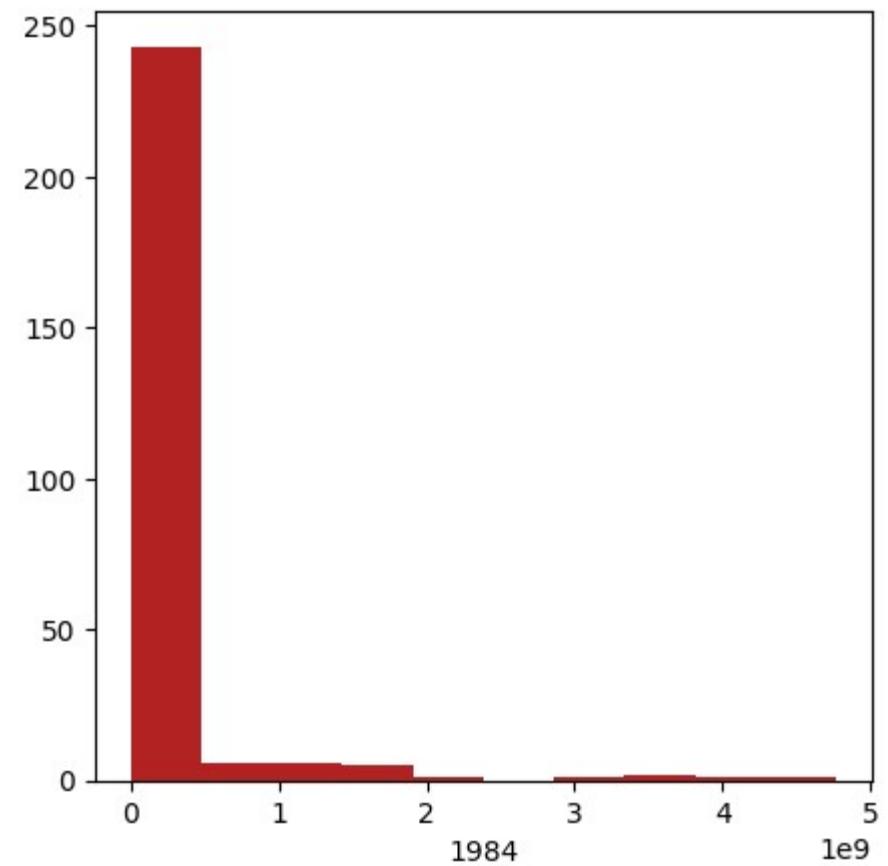


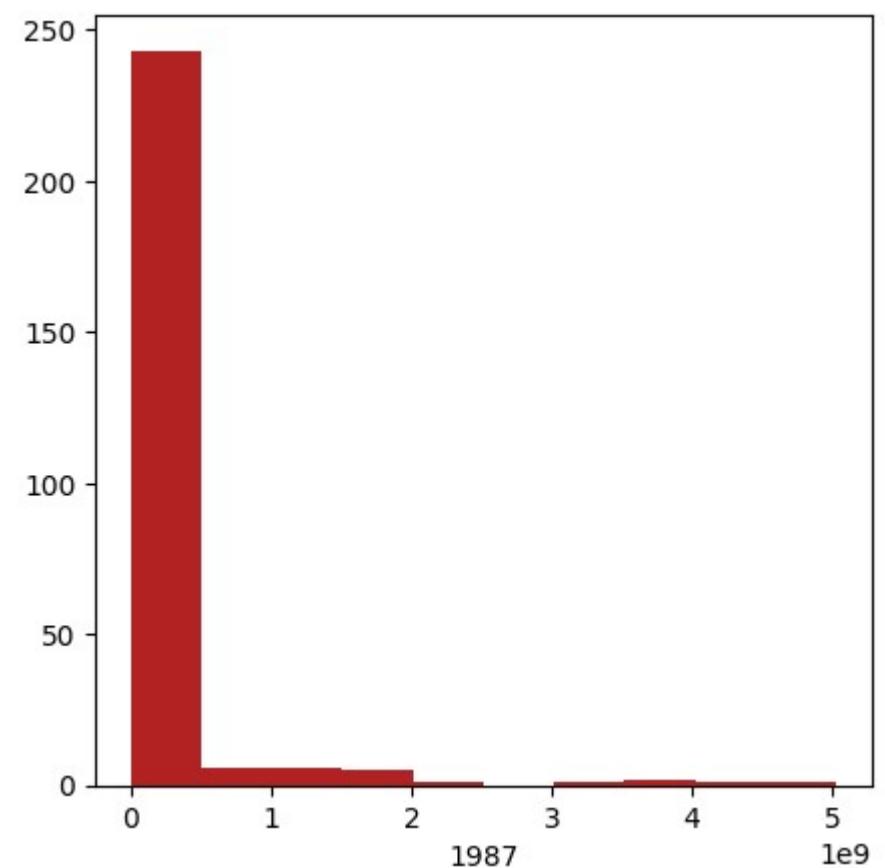
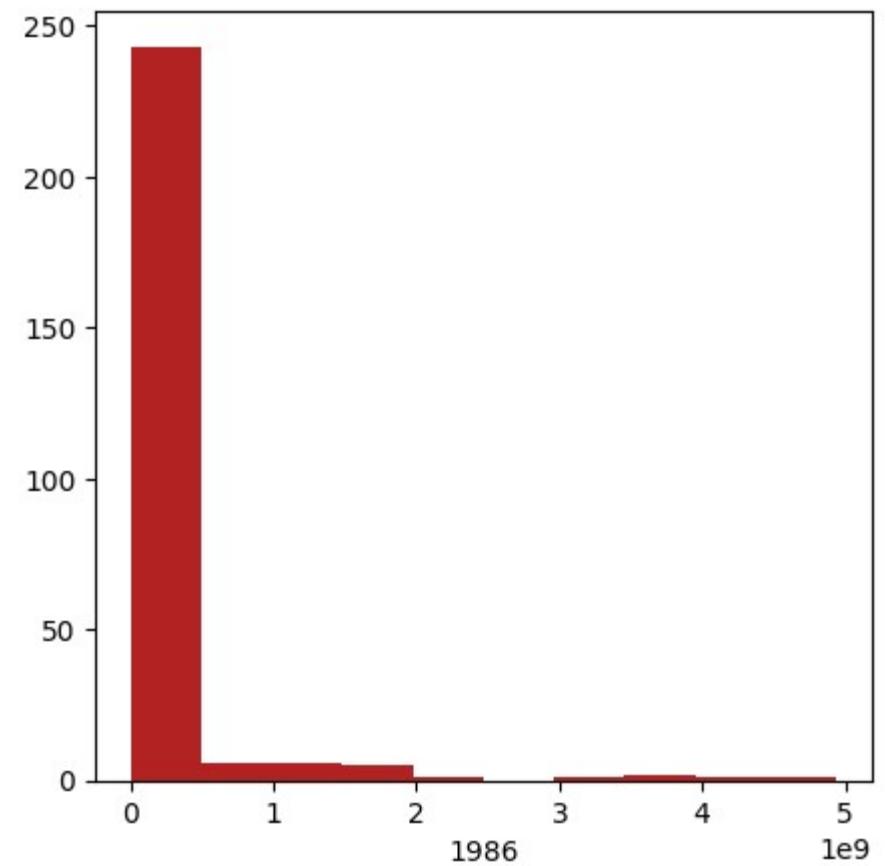


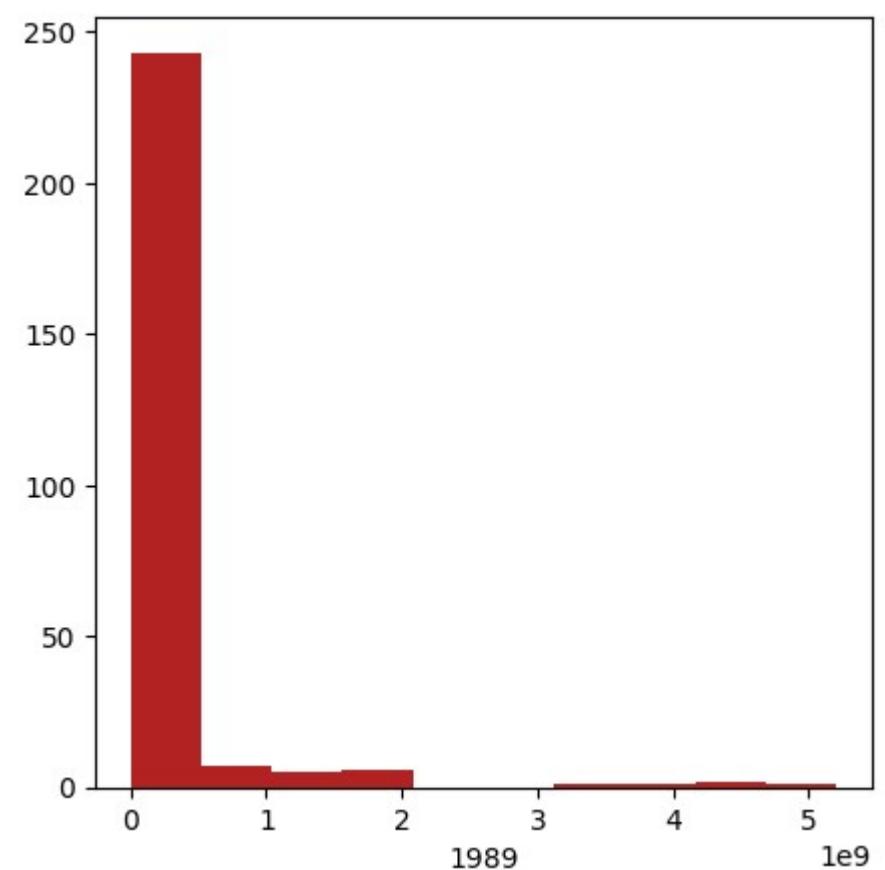
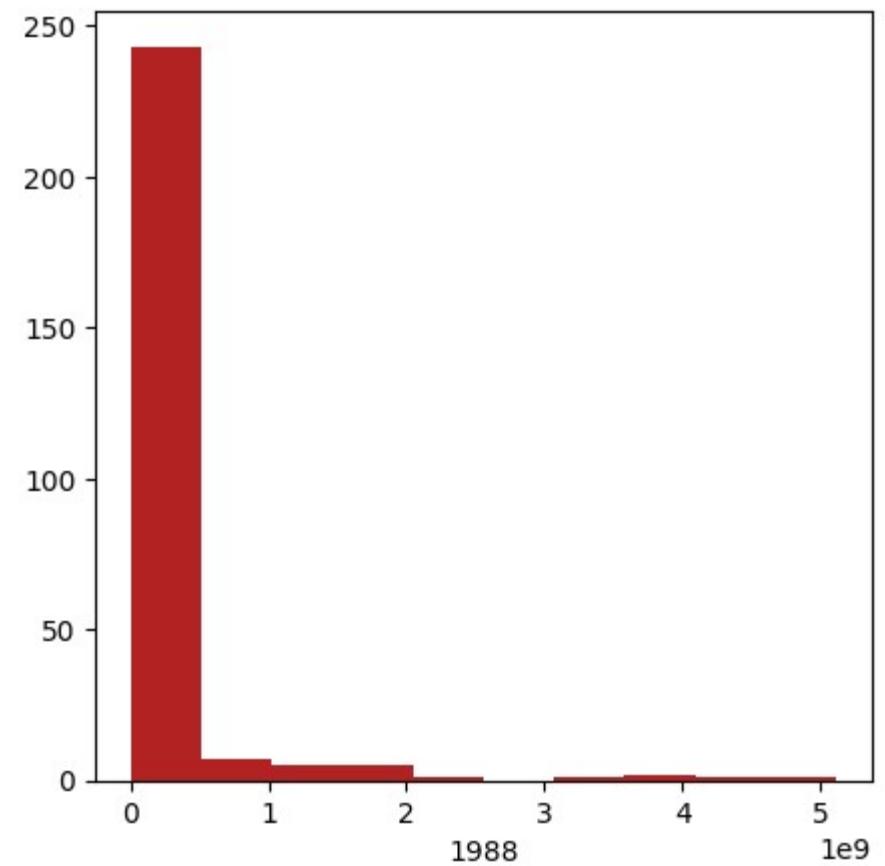


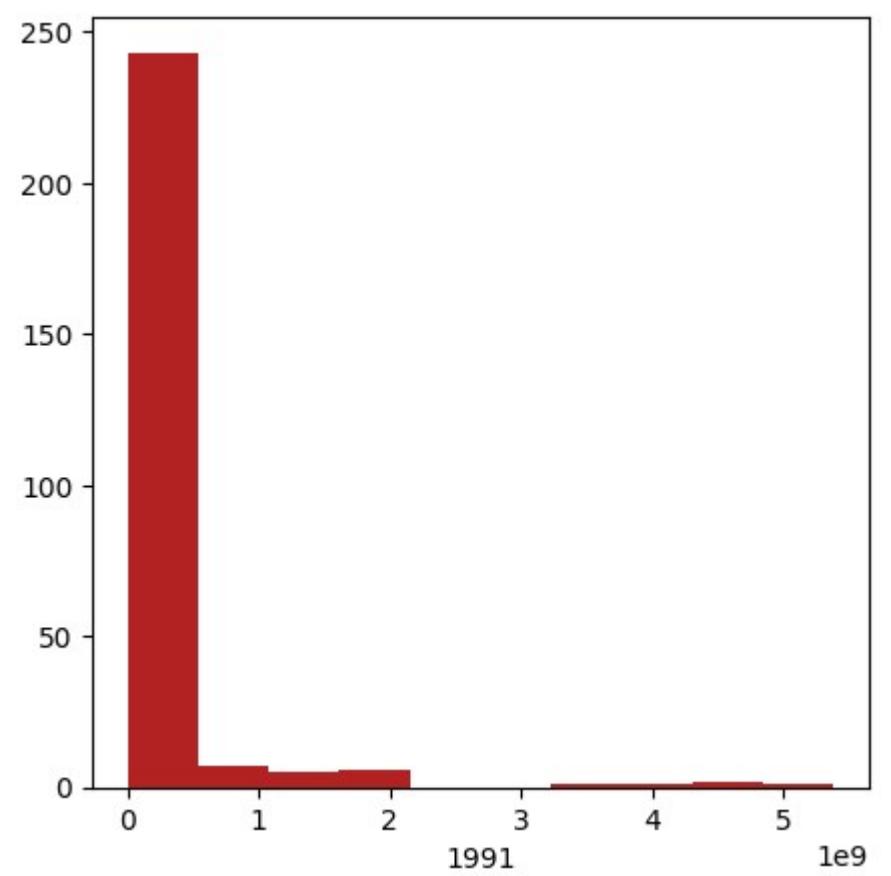
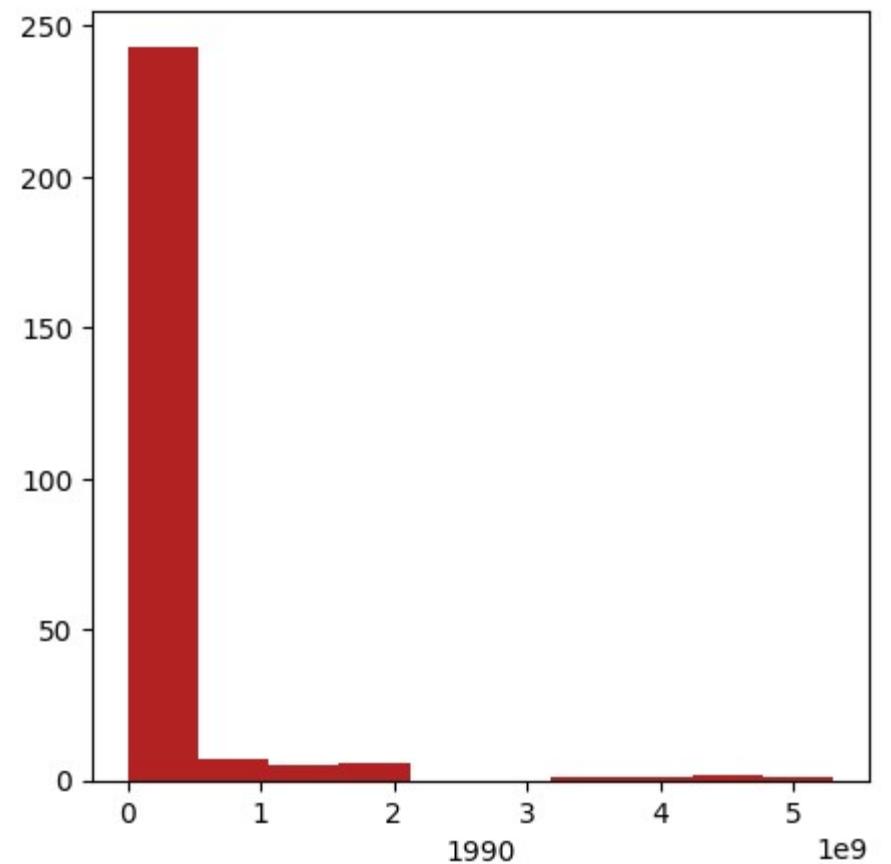


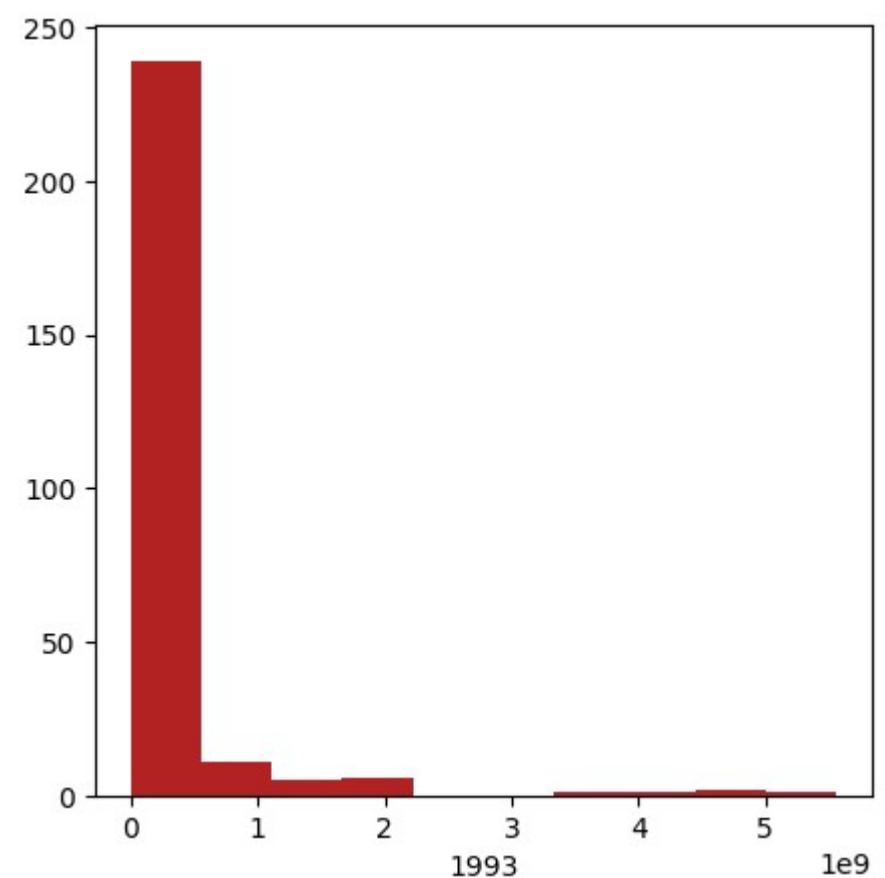
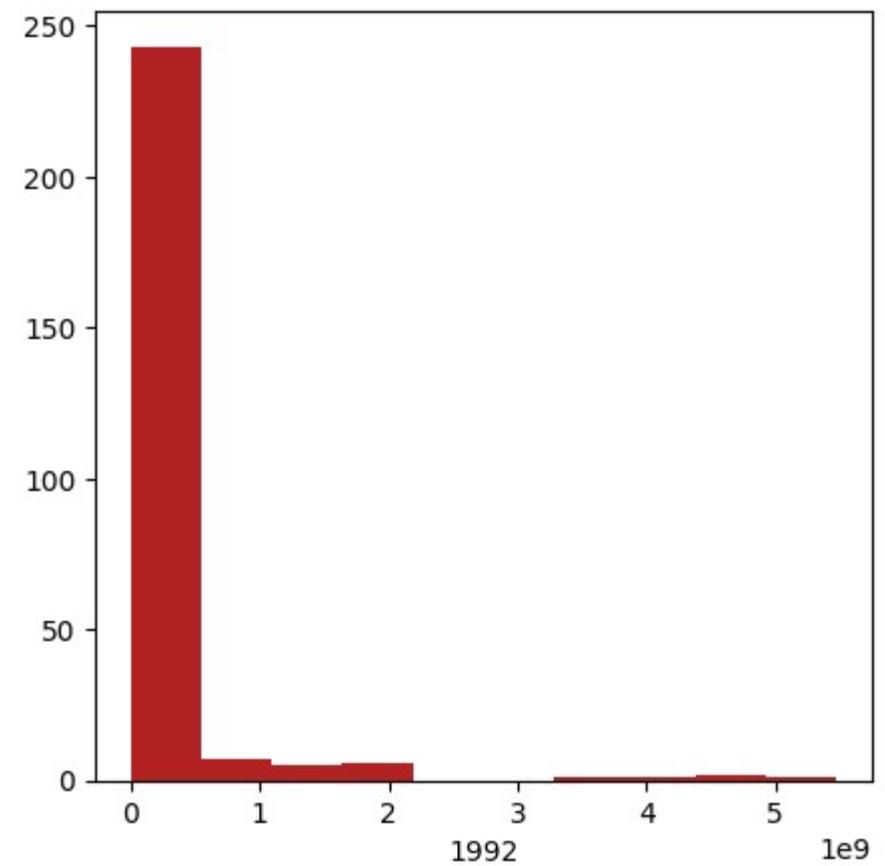


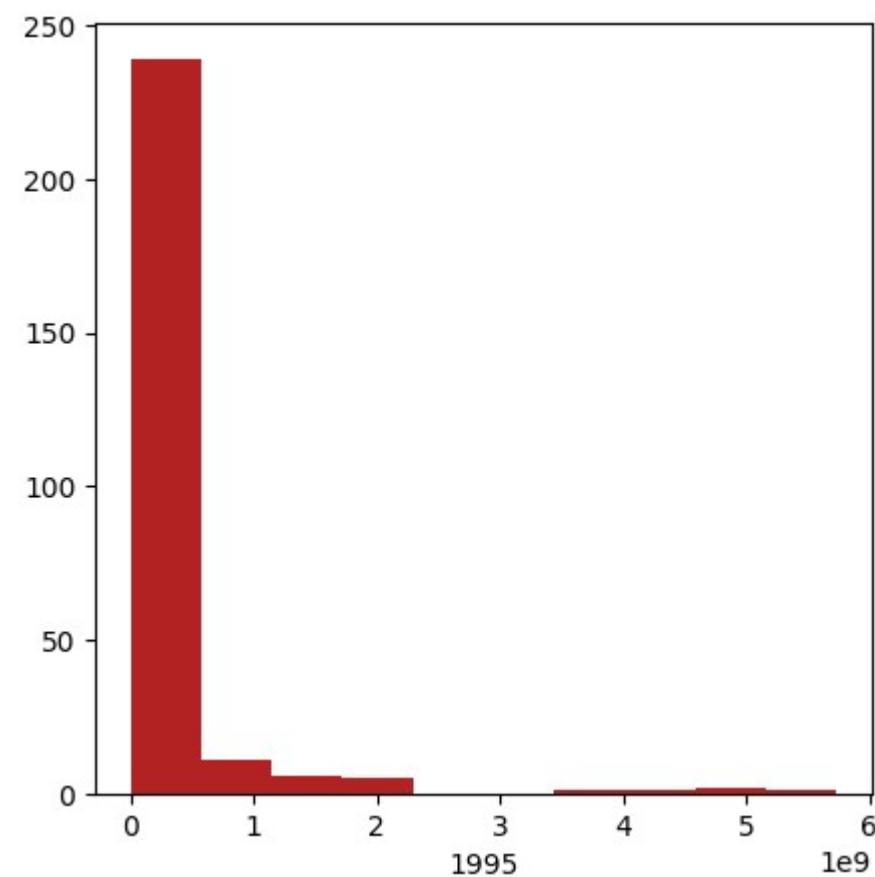
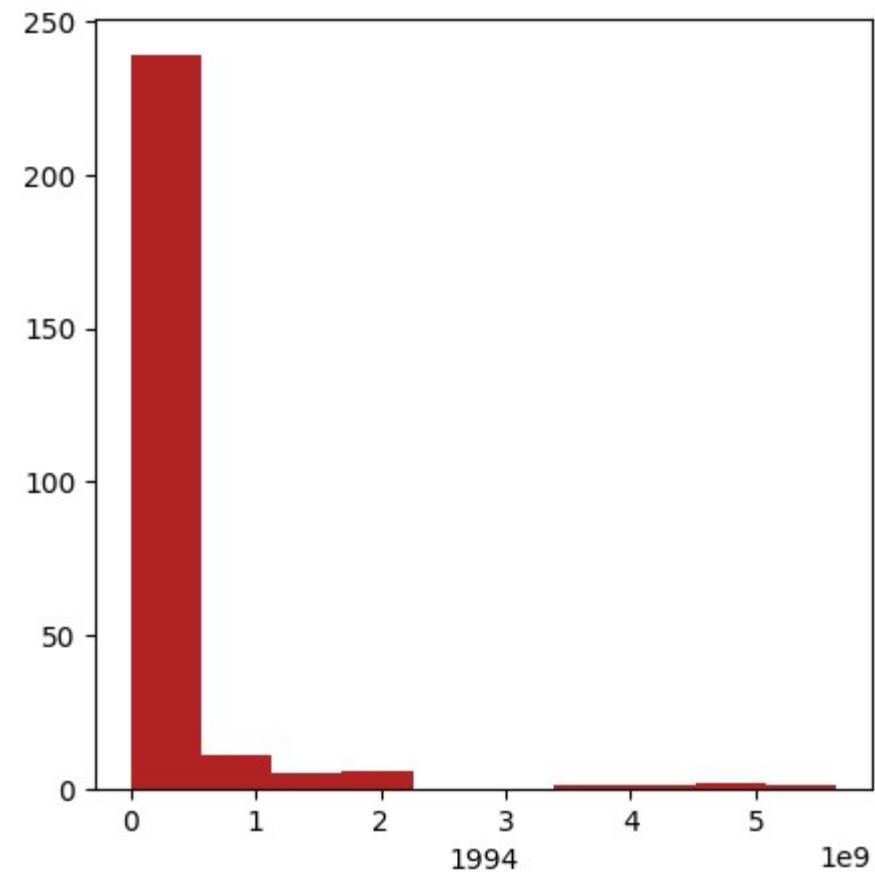


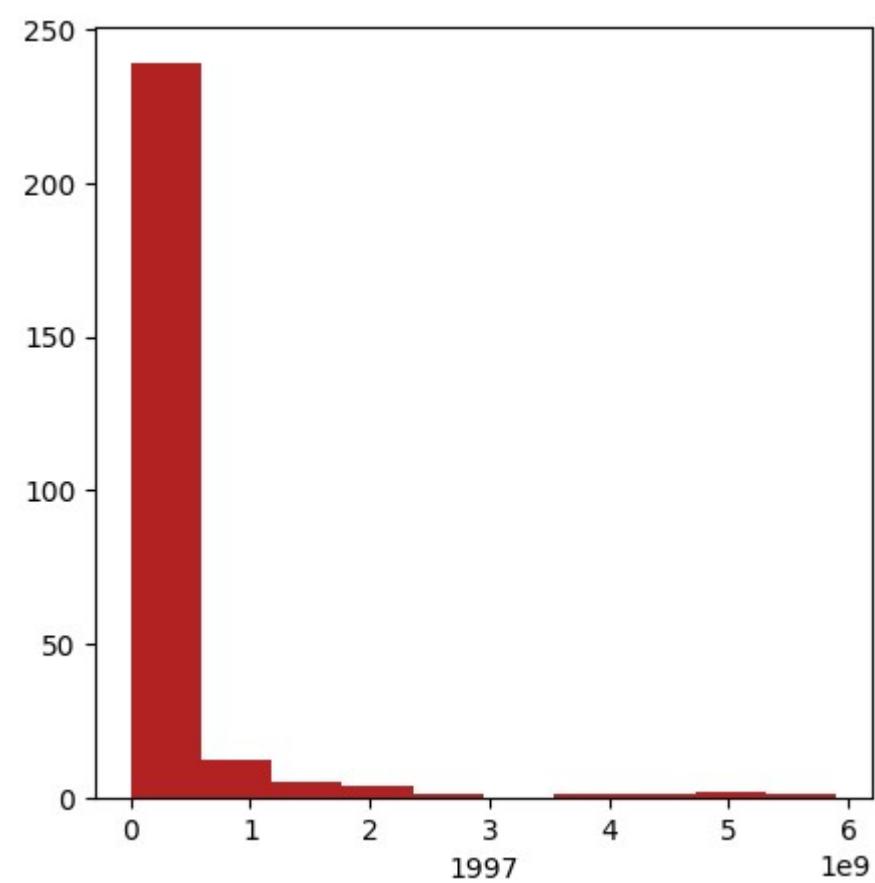
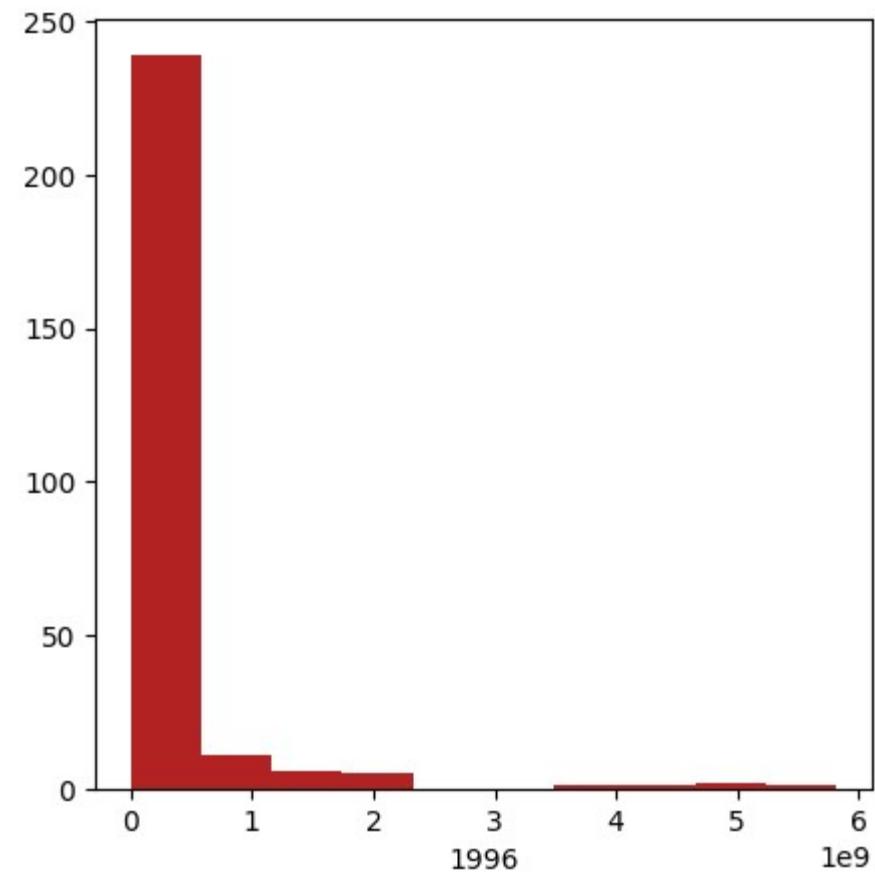


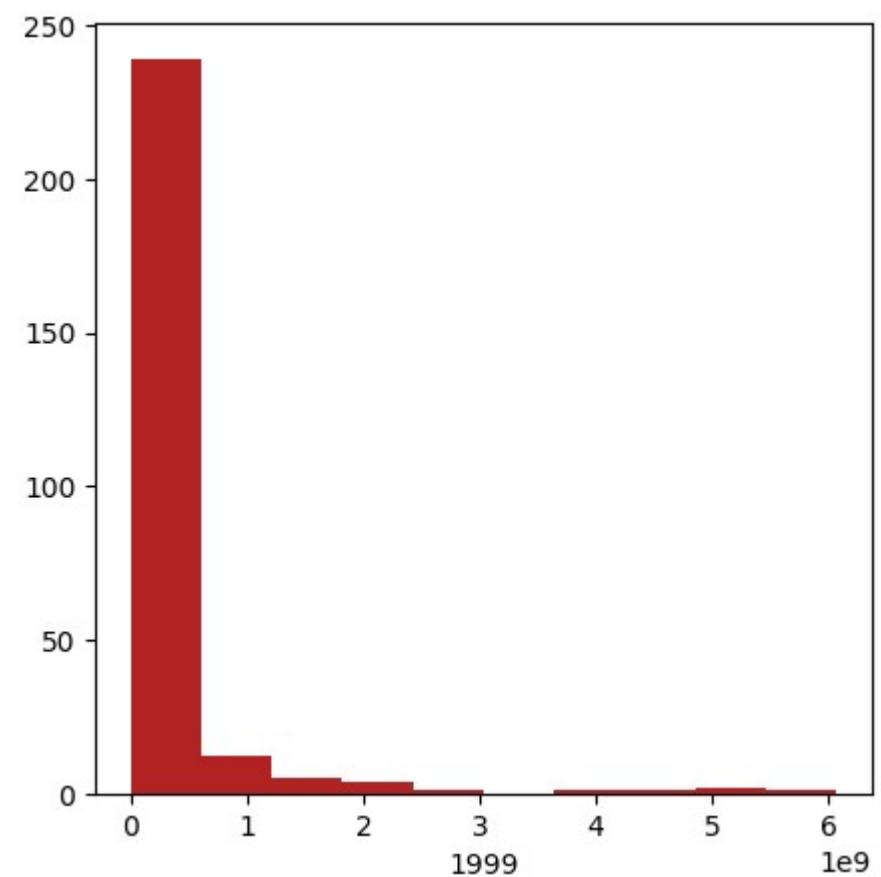
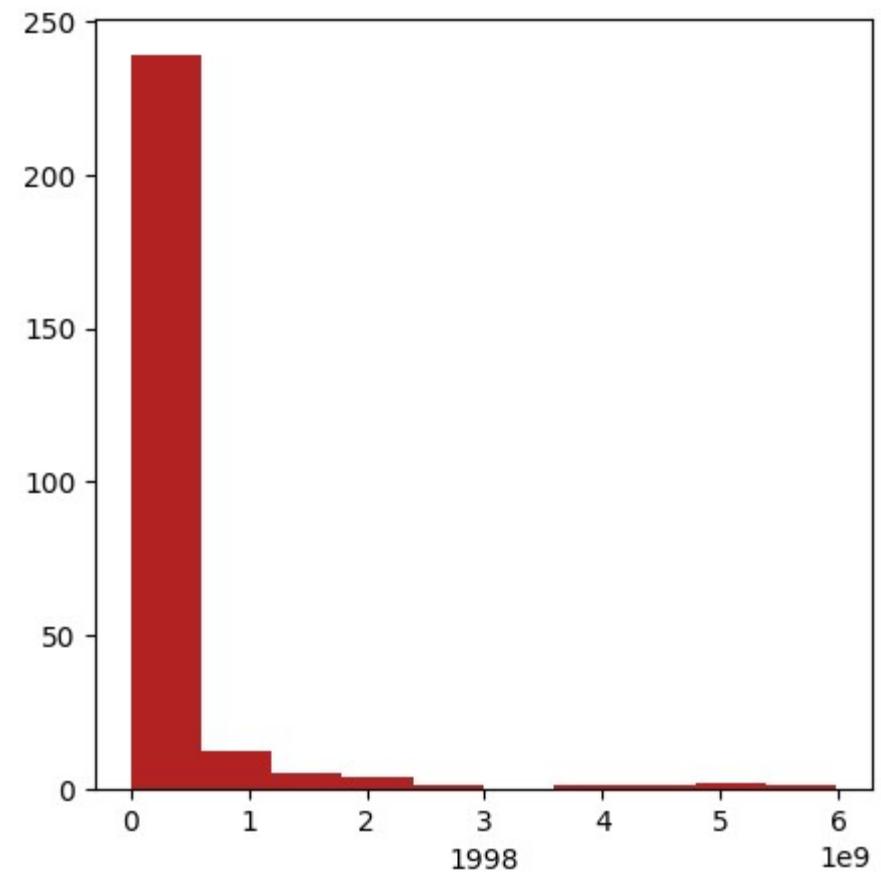


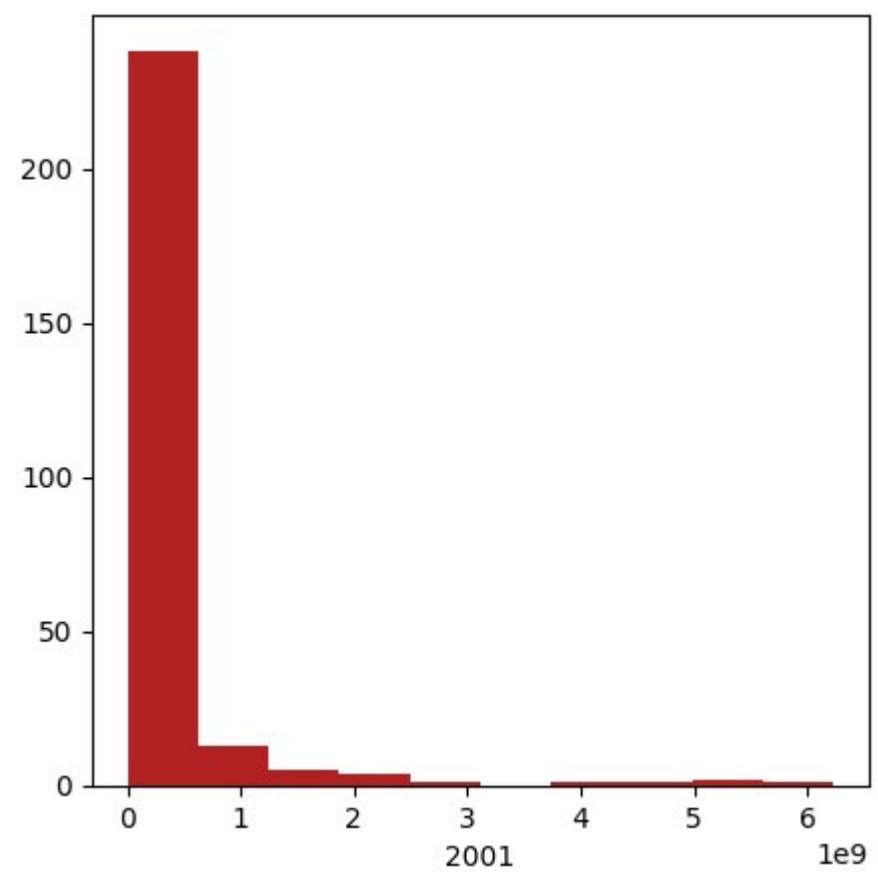
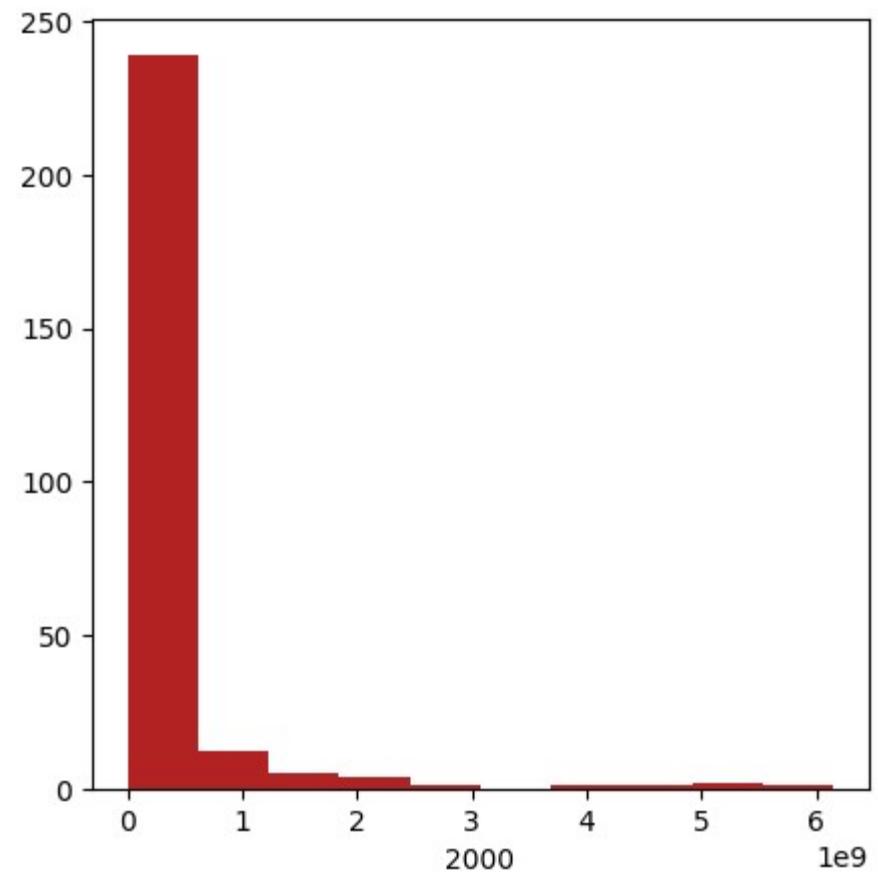


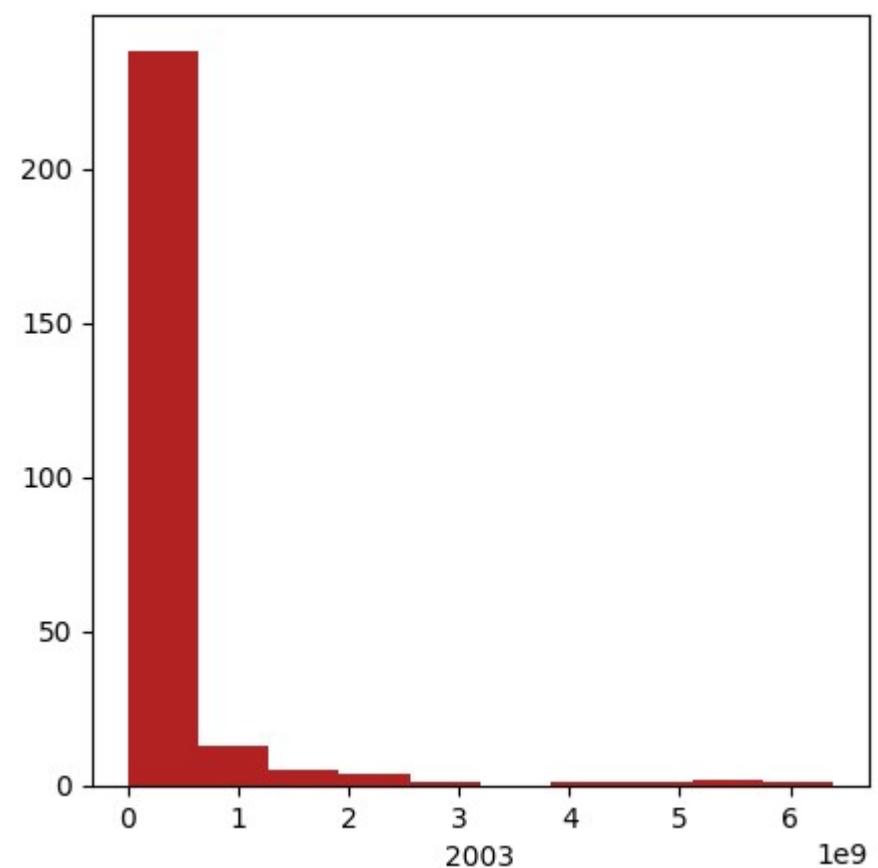
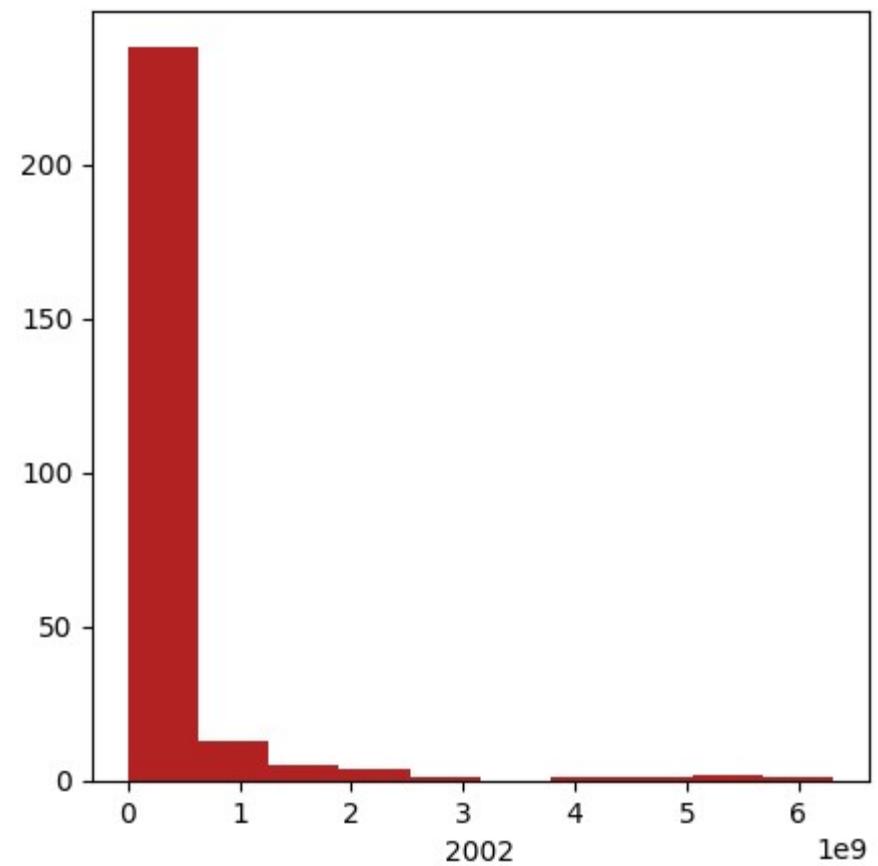


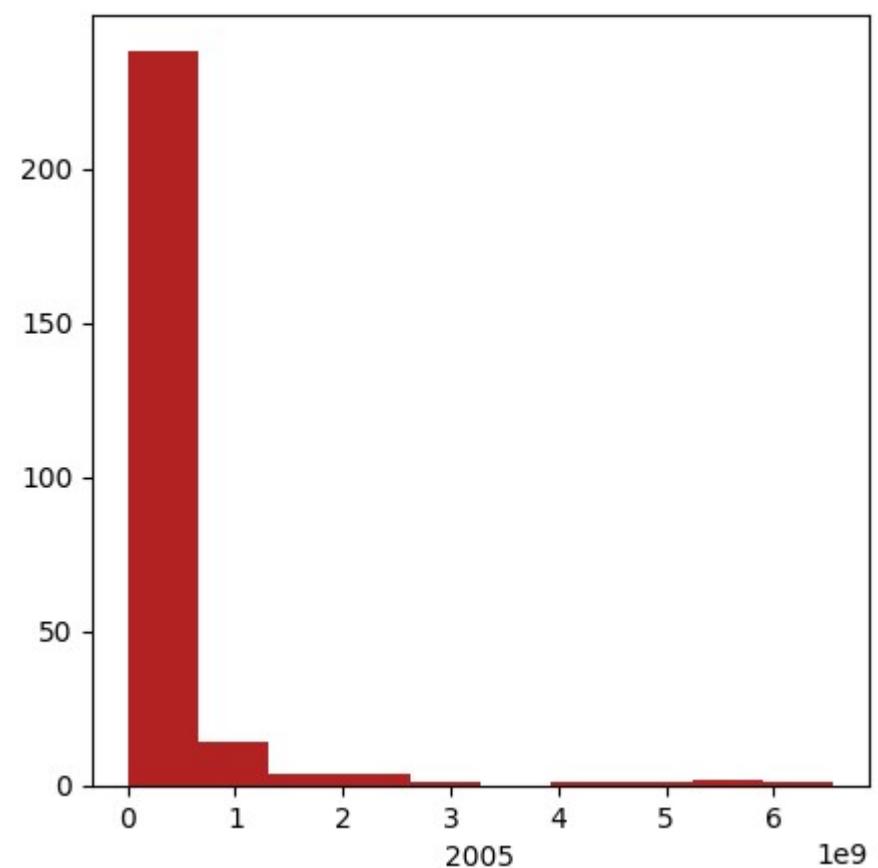
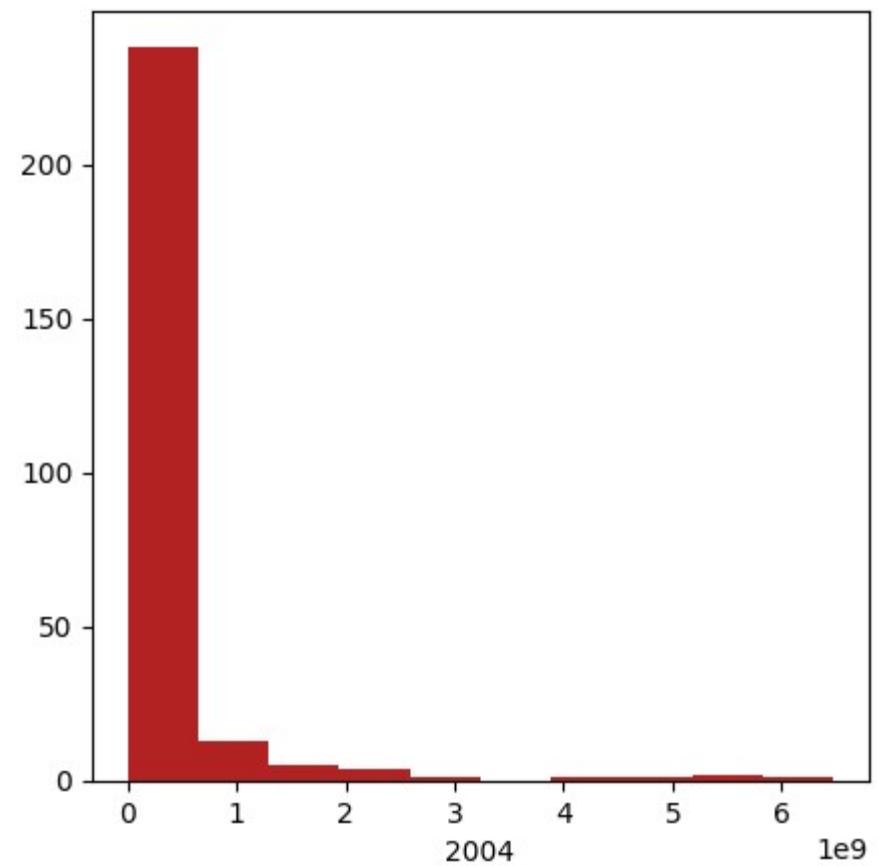


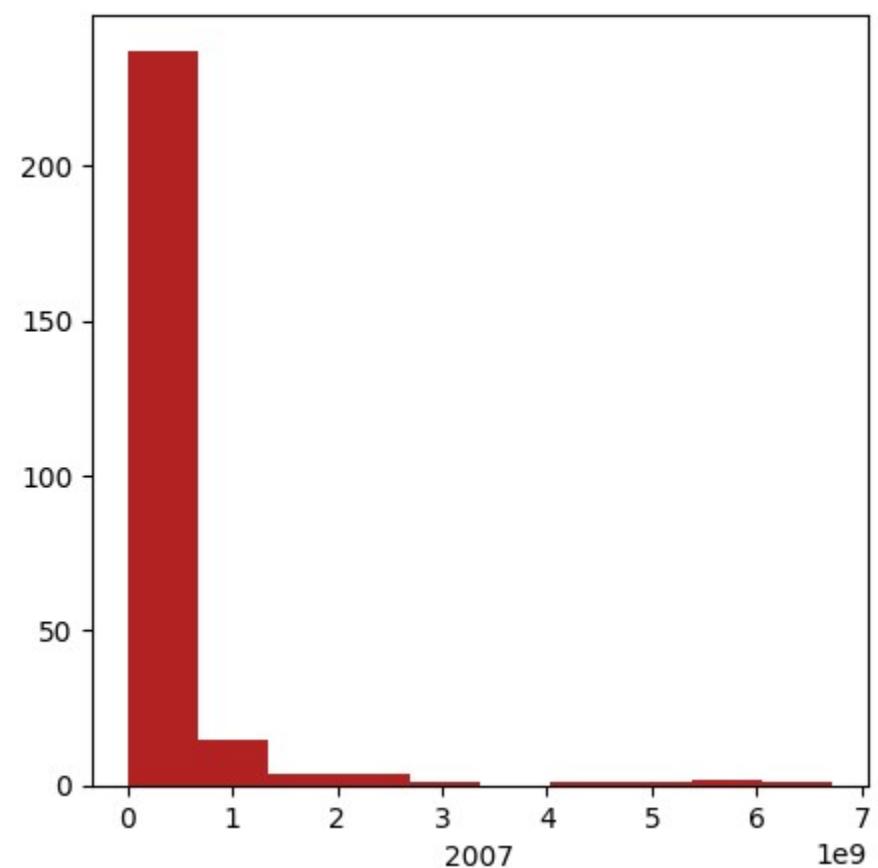
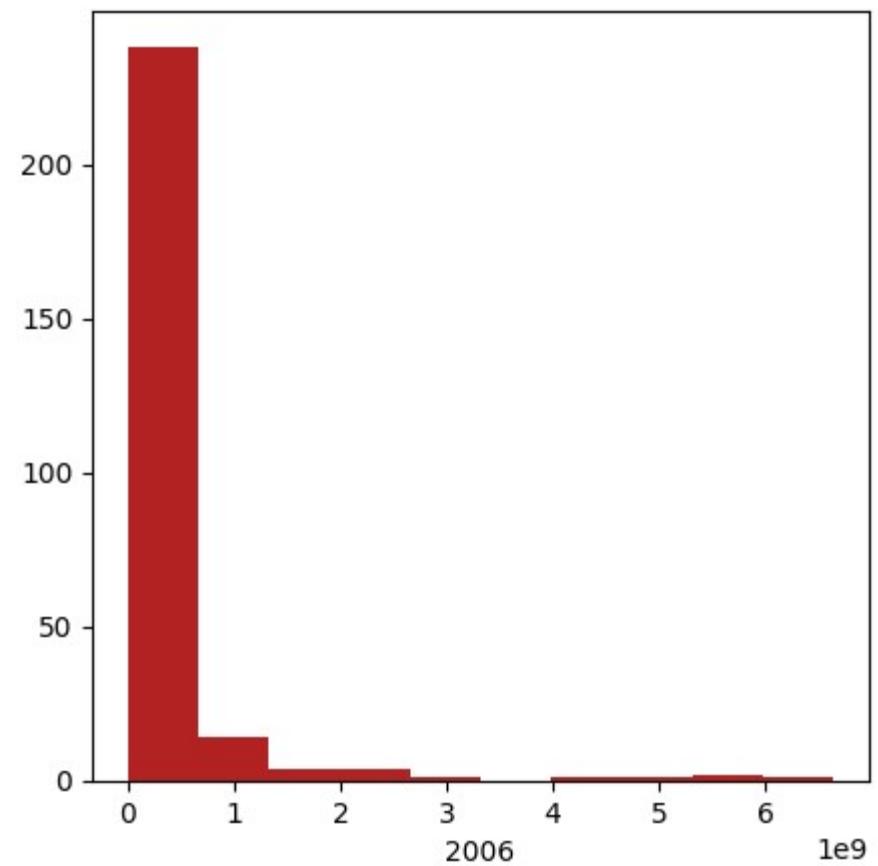


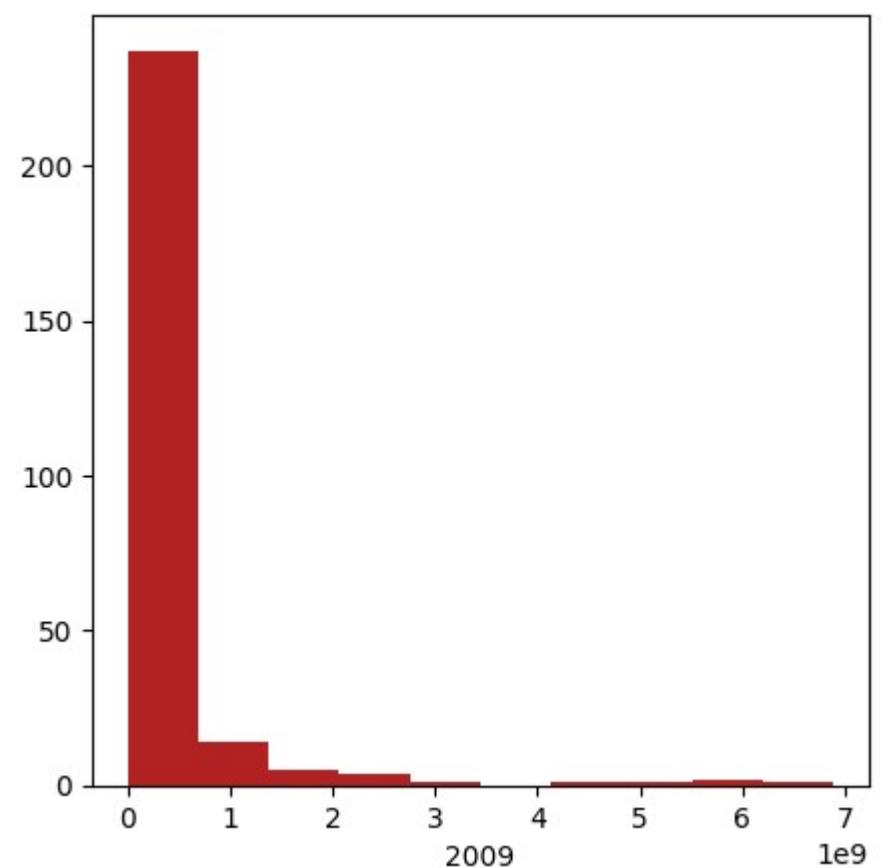
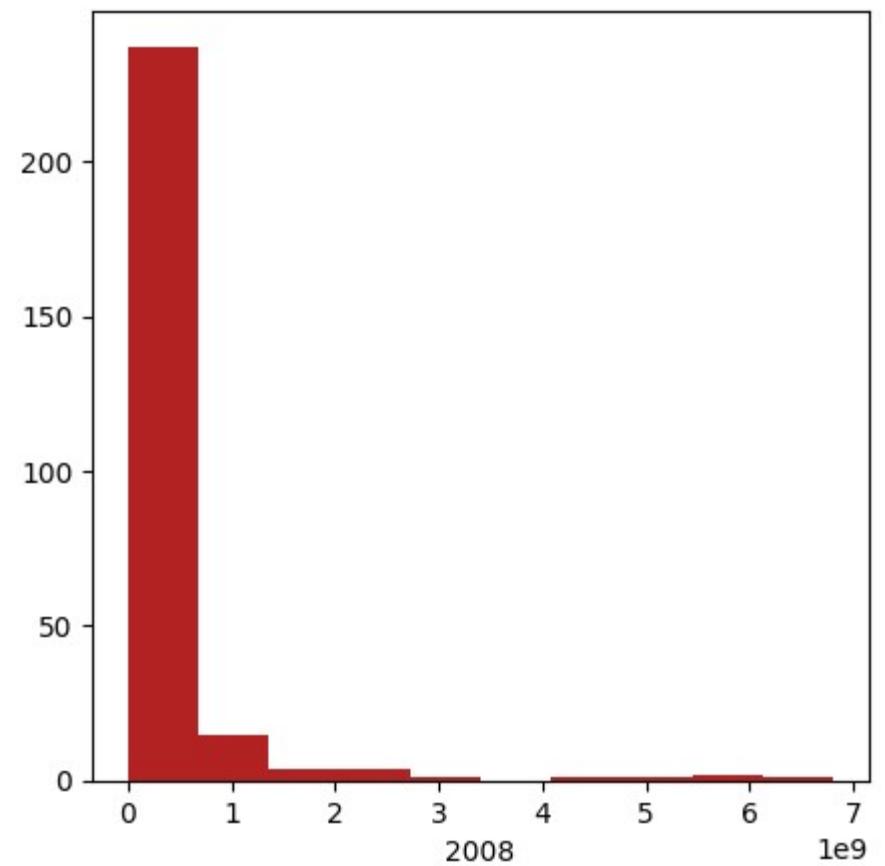


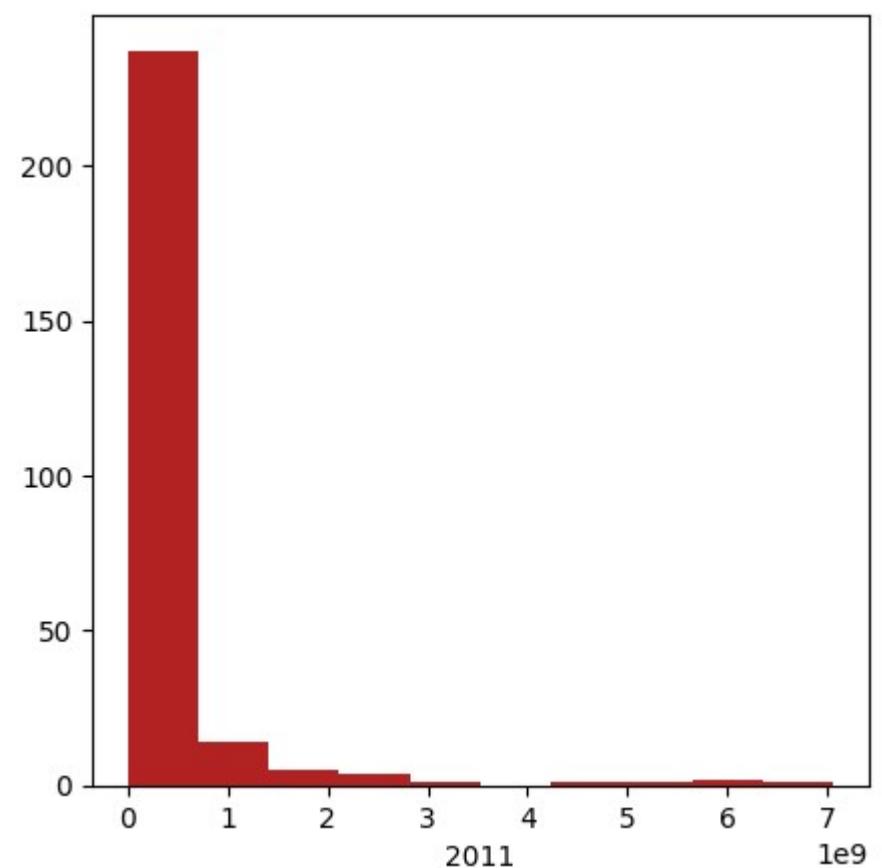
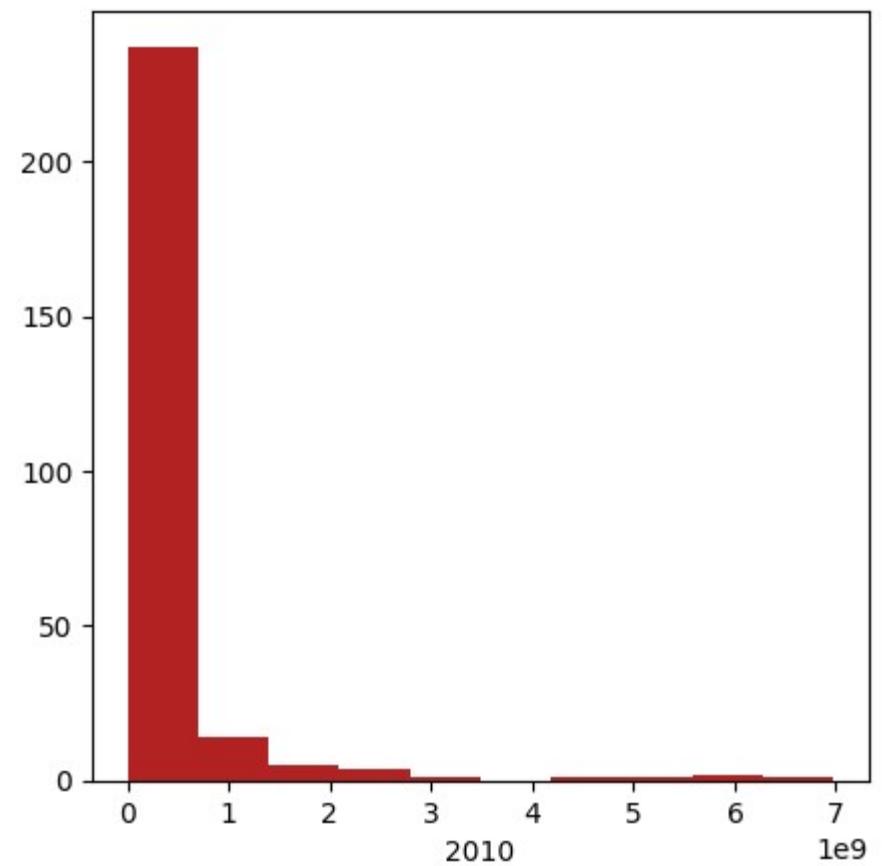


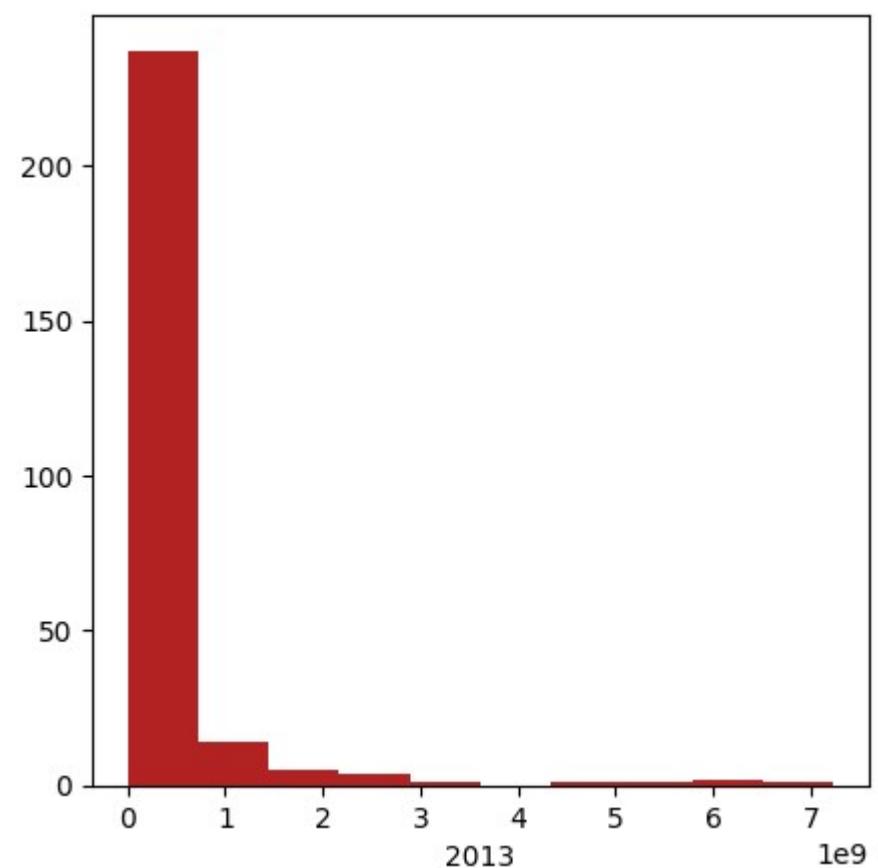
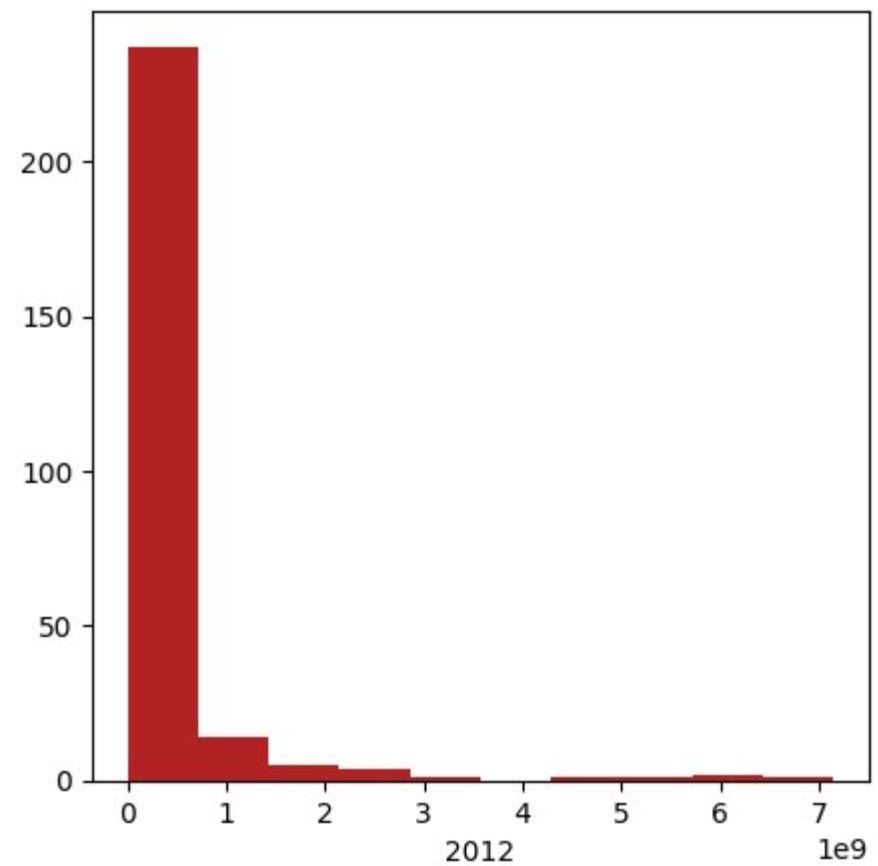


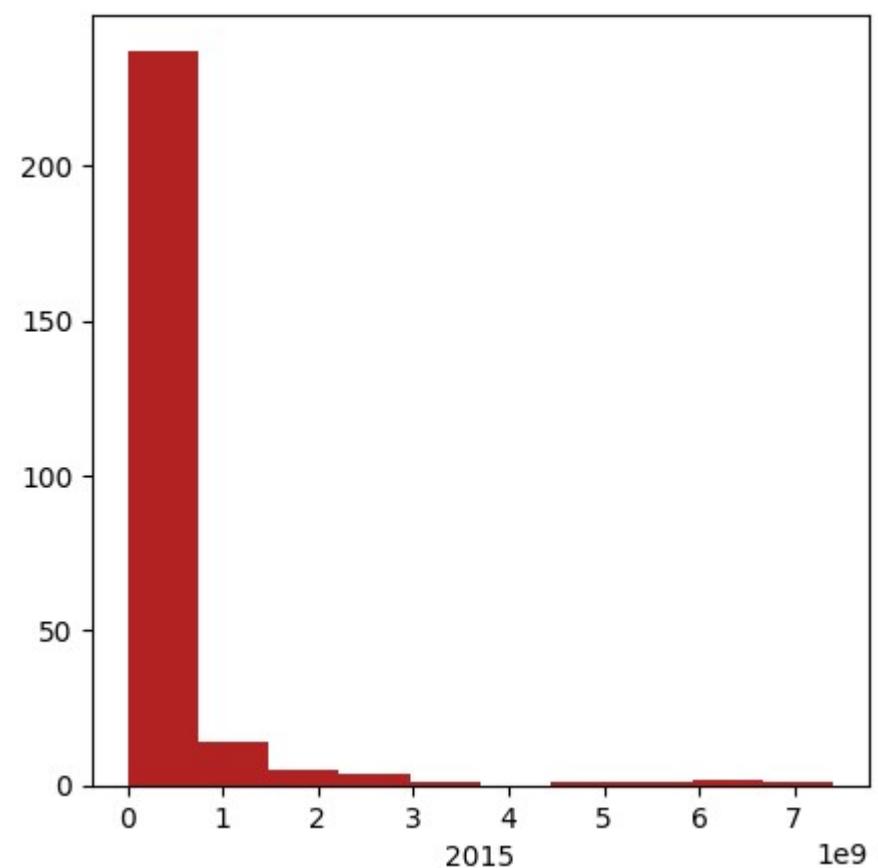
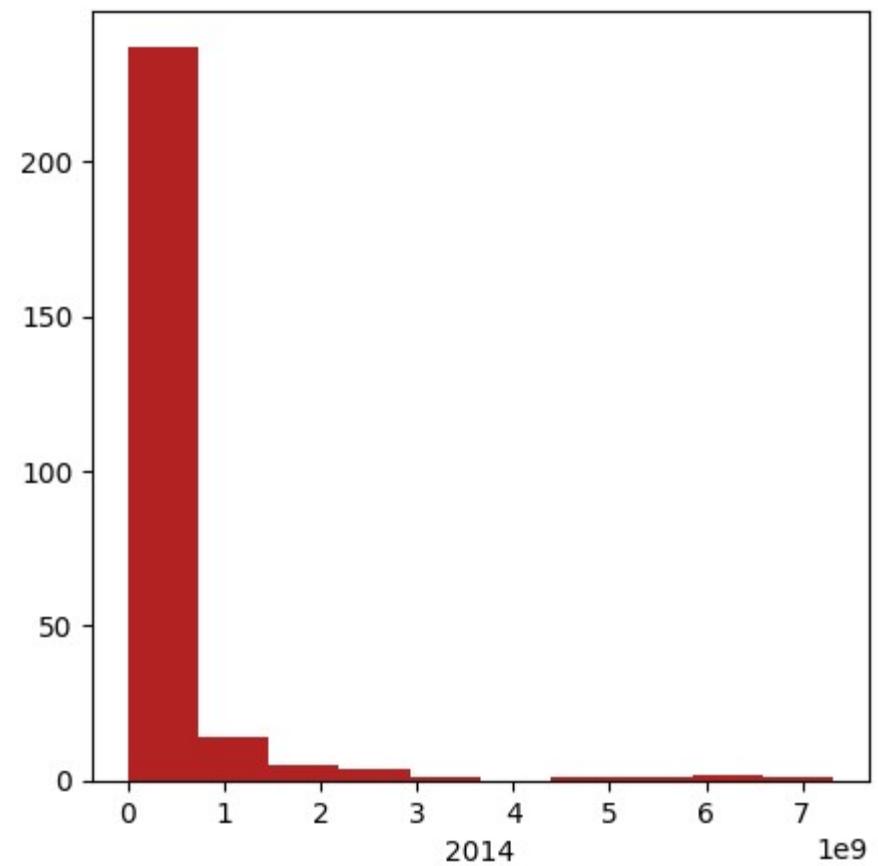


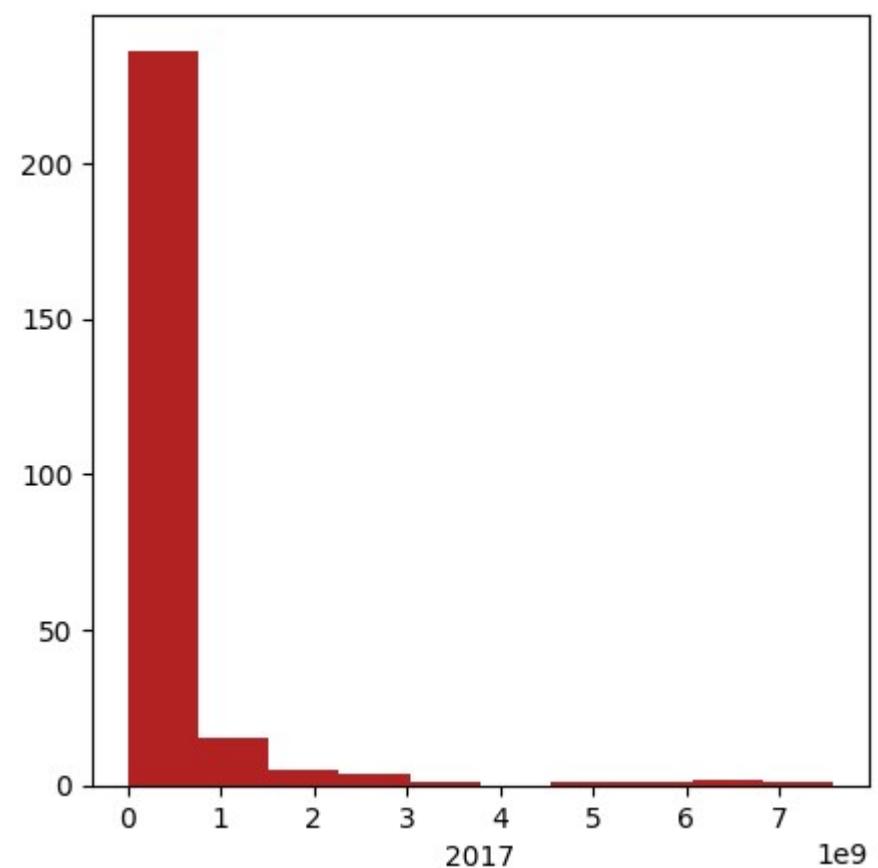
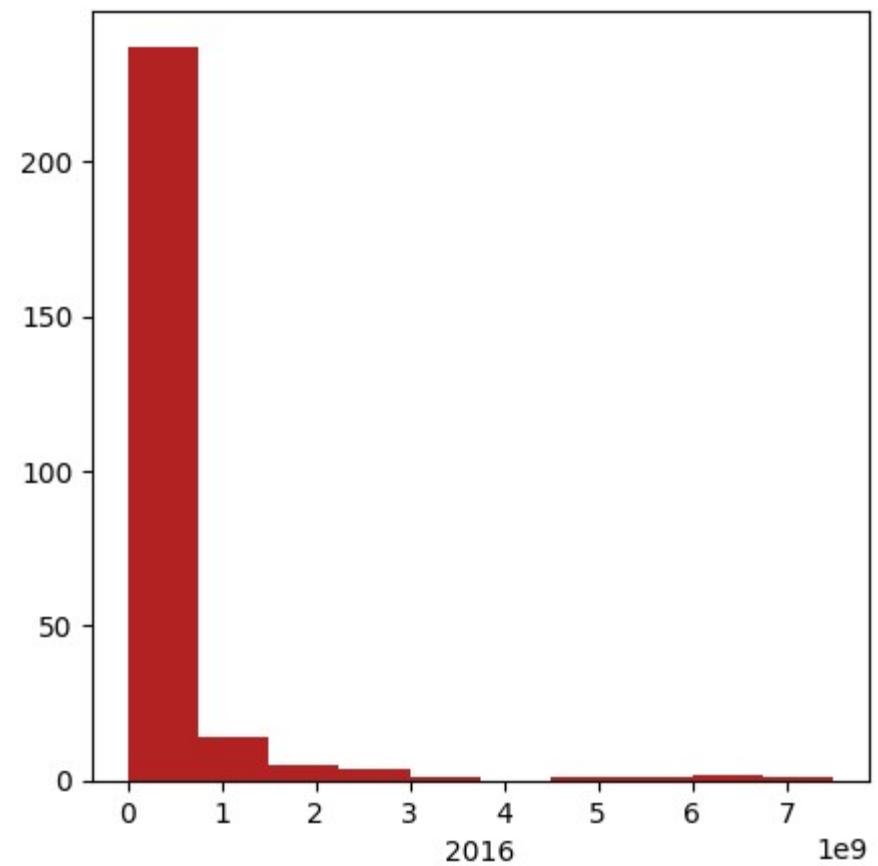


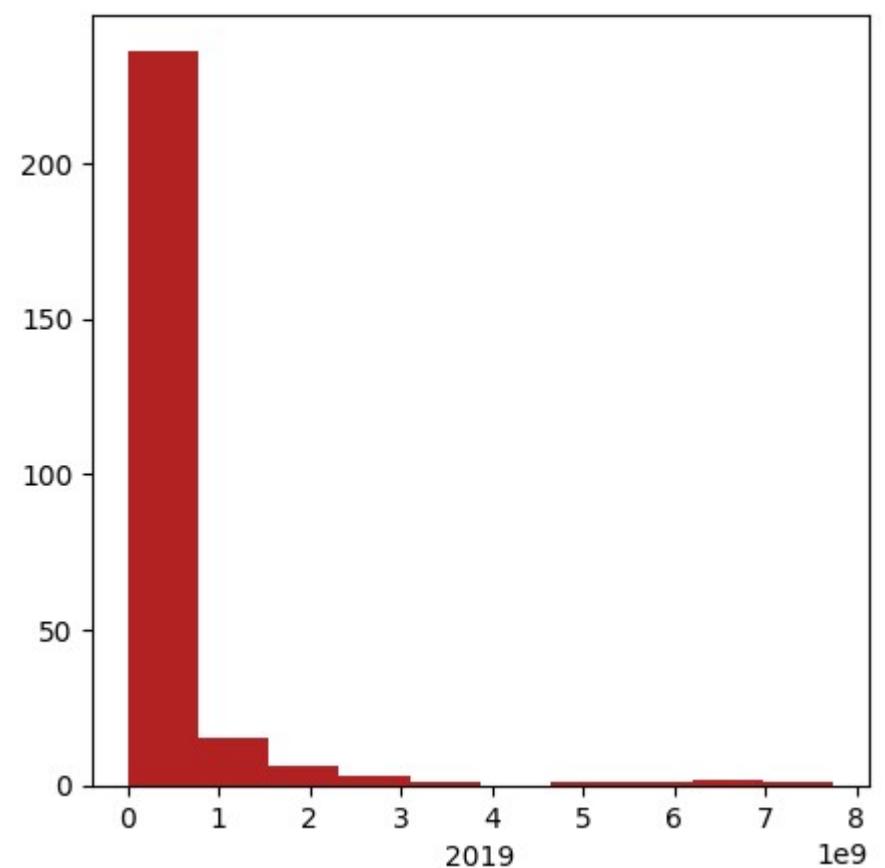
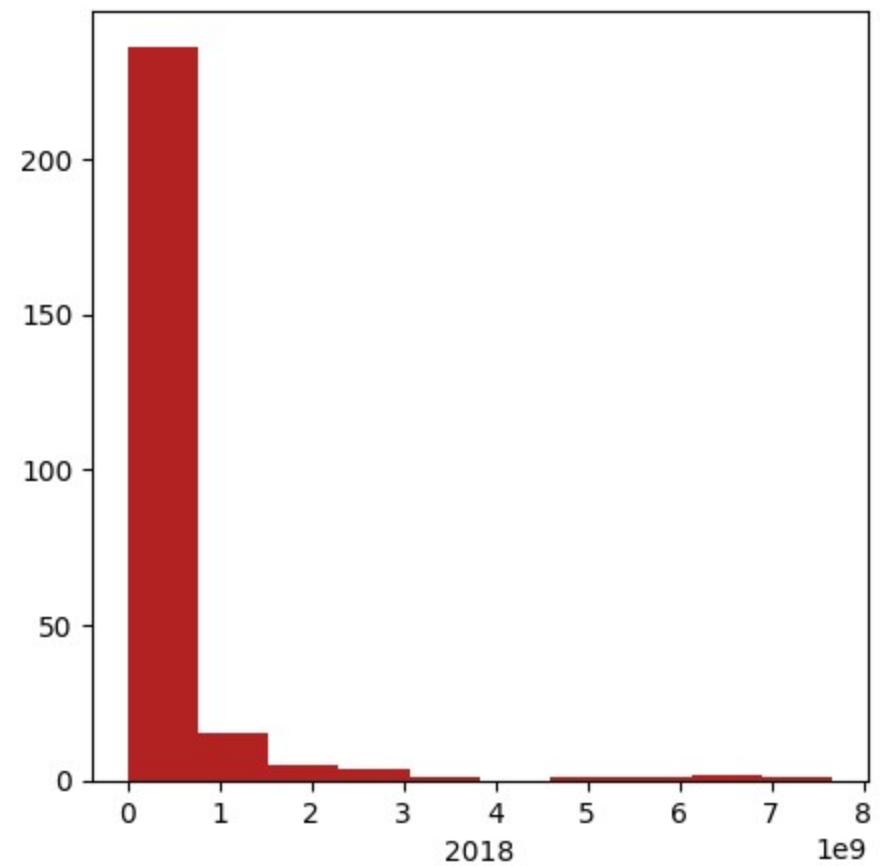


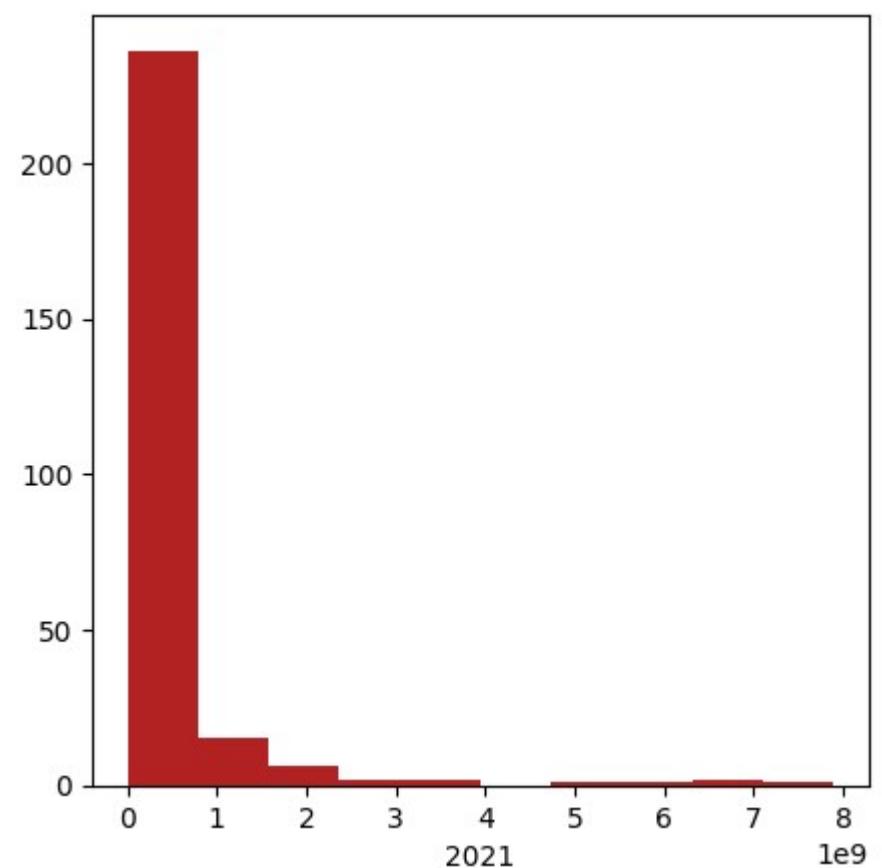
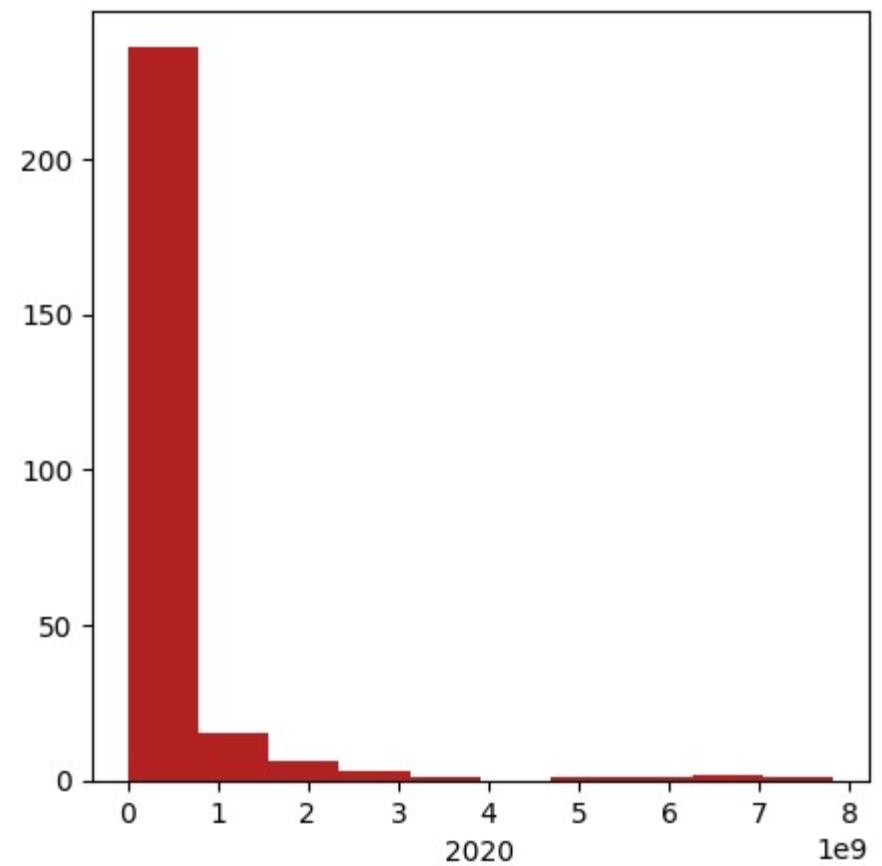


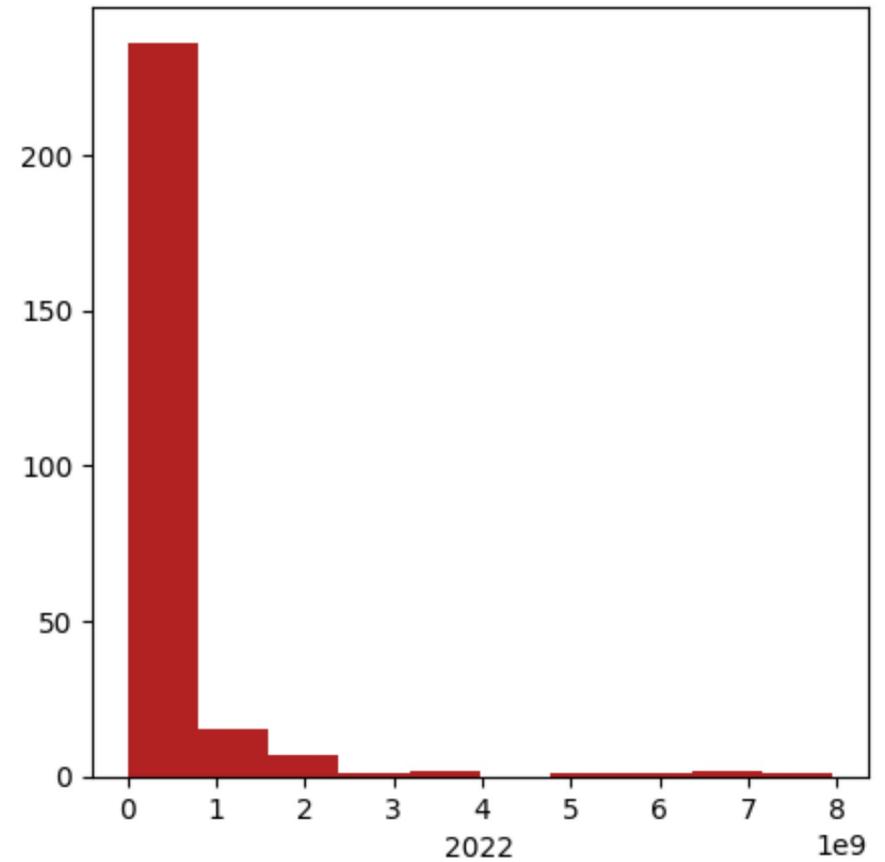






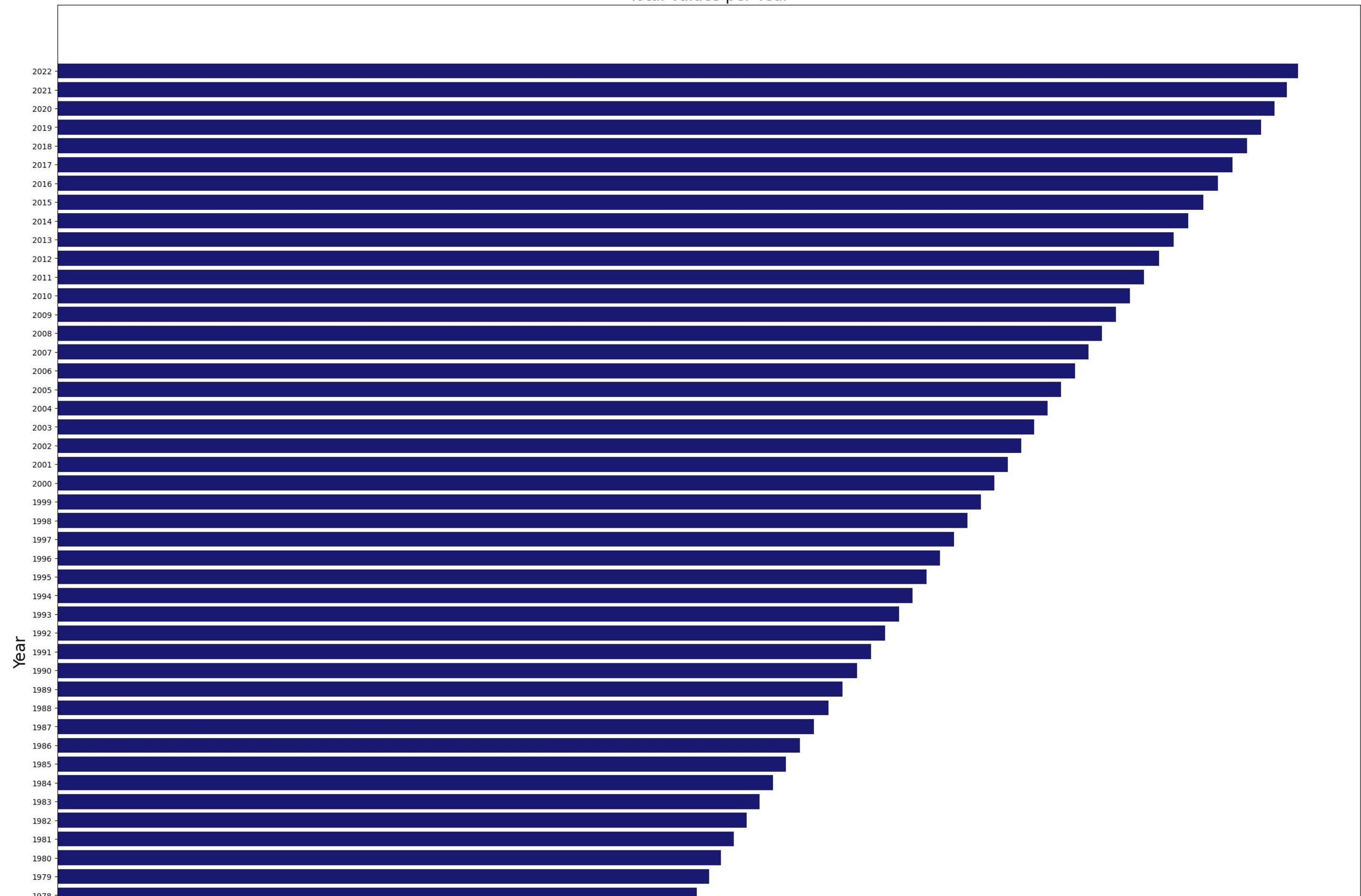


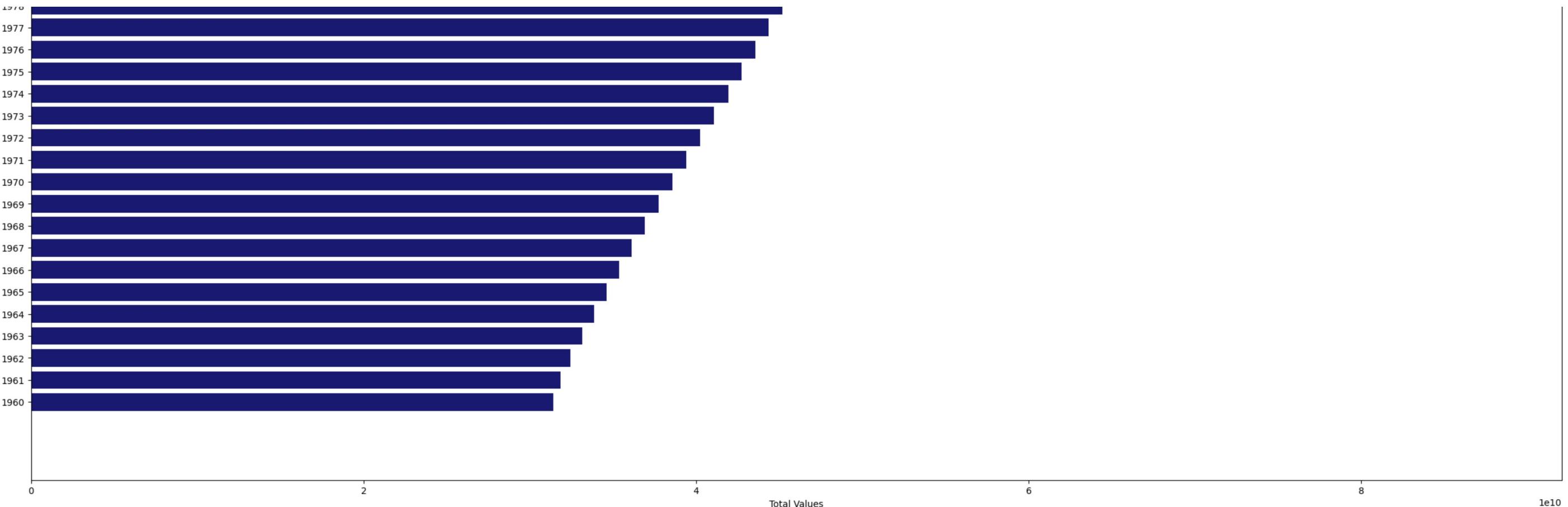




```
In [23]: years = df.columns[1:]  
  
total_values = df[years].sum()  
  
plt.figure(figsize=(30, 30))  
plt.barh(years, total_values,color="#191970")  
plt.xlabel('Total Values')  
plt.ylabel('Year', size=20)  
plt.title('Total Values per Year', size=20)  
plt.show()
```

Total Values per Year





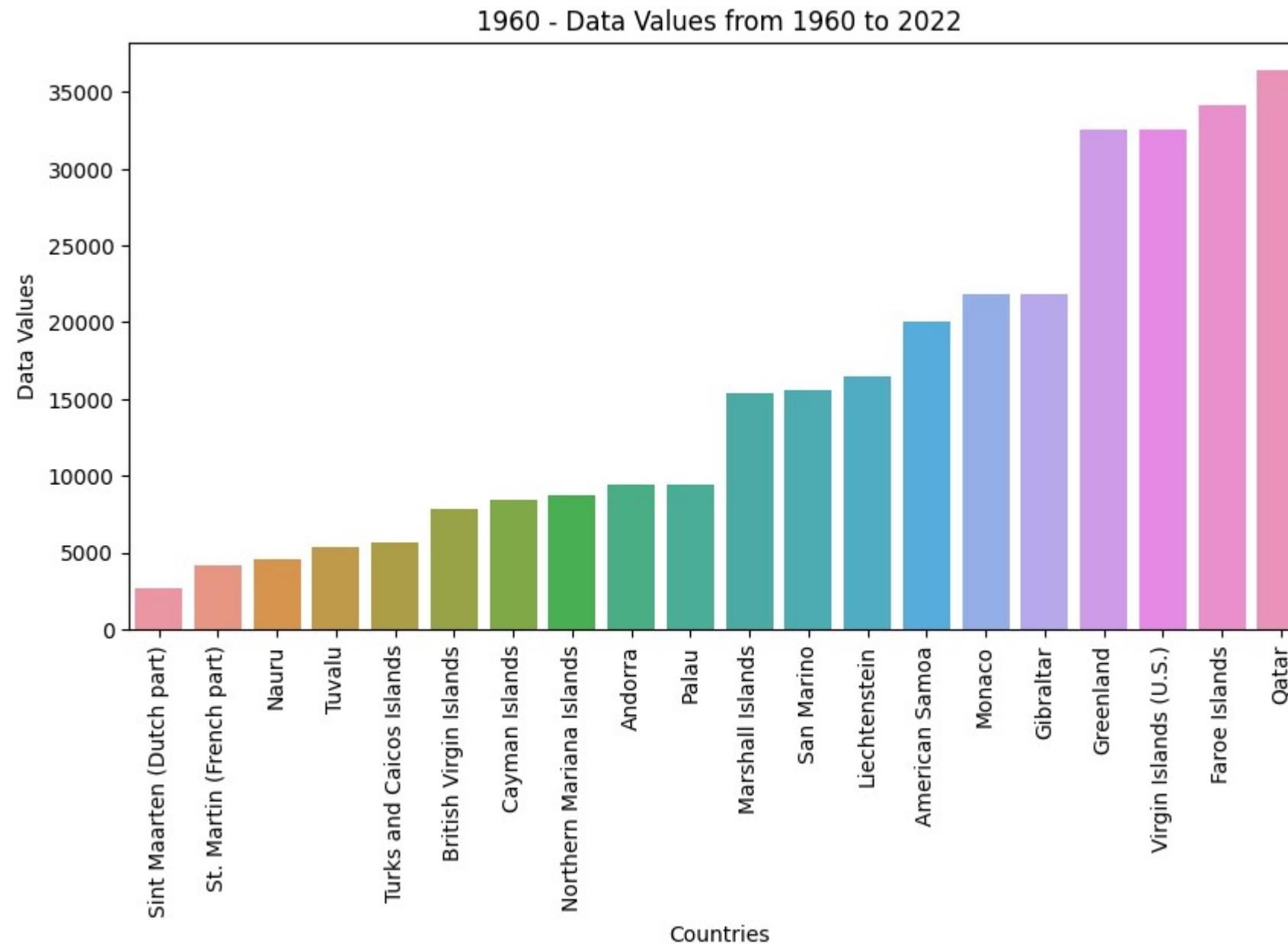
```
In [24]: country_by_1960 = df.sort_values(by='1960').head(20)  
country_by_1960
```

Out[24]:	Country Name	1960	1961	1962	1963	1964	1965	1966	1967	1968	...	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
225	Sint Maarten (Dutch part)	2646.0	2888.0	3171.0	3481.0	3811.0	4161.0	4531.0	4930.0	5354.0	...	36607.0	37685.0	38825.0	39969.0	40574.0	40895.0	41608.0	42310.0	42846.0	43389.0
147	St. Martin (French part)	4135.0	4258.0	4388.0	4524.0	4666.0	4832.0	5044.0	5294.0	5497.0	...	35639.0	35261.0	35020.0	34811.0	34496.0	33852.0	33121.0	32553.0	31948.0	31791.0
179	Nauru	4582.0	4753.0	4950.0	5198.0	5484.0	5804.0	6021.0	6114.0	6288.0	...	10694.0	10940.0	11185.0	11437.0	11682.0	11924.0	12132.0	12315.0	12511.0	12668.0
245	Tuvalu	5404.0	5436.0	5471.0	5503.0	5525.0	5548.0	5591.0	5657.0	5729.0	...	10918.0	10899.0	10877.0	10852.0	10828.0	10865.0	10956.0	11069.0	11204.0	11312.0
228	Turks and Caicos Islands	5604.0	5625.0	5633.0	5634.0	5642.0	5650.0	5652.0	5662.0	5668.0	...	33594.0	34985.0	36538.0	38246.0	39844.0	41487.0	43080.0	44276.0	45114.0	45703.0
255	British Virgin Islands	7850.0	7885.0	7902.0	7919.0	7949.0	8018.0	8139.0	8337.0	8649.0	...	28657.0	28971.0	29366.0	29739.0	30060.0	30335.0	30610.0	30910.0	31122.0	31305.0
52	Cayman Islands	8473.0	8626.0	8799.0	8985.0	9172.0	9366.0	9566.0	9771.0	9981.0	...	58212.0	59559.0	60911.0	62255.0	63581.0	64884.0	66134.0	67311.0	68136.0	68706.0
164	Northern Mariana Islands	8702.0	8965.0	9252.0	9561.0	9890.0	10229.0	10577.0	10720.0	10440.0	...	52141.0	51856.0	51514.0	51133.0	50729.0	50304.0	49858.0	49587.0	49481.0	49551.0
6	Andorra	9443.0	10216.0	11014.0	11839.0	12690.0	13563.0	14546.0	15745.0	17079.0	...	71367.0	71621.0	71746.0	72540.0	73837.0	75013.0	76343.0	77700.0	79034.0	79824.0
188	Palau	9446.0	9639.0	9851.0	10076.0	10318.0	10563.0	10813.0	10992.0	11079.0	...	17805.0	17796.0	17794.0	17816.0	17837.0	17864.0	17916.0	17972.0	18024.0	18055.0
155	Marshall Islands	15374.0	15867.0	16387.0	16947.0	17537.0	18154.0	18794.0	19665.0	21001.0	...	51352.0	50419.0	49410.0	48329.0	47187.0	45989.0	44728.0	43413.0	42050.0	41569.0
212	San Marino	15556.0	15895.0	16242.0	16583.0	16926.0	17273.0	17588.0	17907.0	18291.0	...	33285.0	33389.0	33570.0	33834.0	34056.0	34156.0	34178.0	34007.0	33745.0	33660.0
137	Liechtenstein	16472.0	16834.0	17221.0	17625.0	18058.0	18500.0	18957.0	19467.0	20011.0	...	36806.0	37096.0	37355.0	37609.0	37889.0	38181.0	38482.0	38756.0	39039.0	39327.0
11	American Samoa	20085.0	20626.0	21272.0	21949.0	22656.0	23391.0	24122.0	24848.0	25608.0	...	52995.0	52217.0	51368.0	50448.0	49463.0	48424.0	47321.0	46189.0	45035.0	44273.0
149	Monaco	21797.0	21907.0	22106.0	22442.0	22766.0	23022.0	23198.0	23281.0	23481.0	...	35425.0	36110.0	36760.0	37071.0	37044.0	37029.0	37034.0	36922.0	36686.0	36469.0
84	Gibraltar	21822.0	21907.0	22249.0	22796.0	23347.0	23910.0	24477.0	25047.0	25610.0	...	32411.0	32452.0	32520.0	32565.0	32602.0	32648.0	32685.0	32709.0	32669.0	32649.0
91	Greenland	32500.0	33700.0	35000.0	36400.0	37600.0	39200.0	40500.0	41900.0	43400.0	...	56483.0	56295.0	56114.0	56186.0	56172.0	56023.0	56225.0	56367.0	56653.0	56661.0
256	Virgin Islands (U.S.)	32500.0	34300.0	35000.0	39800.0	40800.0	43500.0	46200.0	49100.0	55700.0	...	108041.0	107882.0	107712.0	107516.0	107281.0	107001.0	106669.0	106290.0	105870.0	105413.0
78	Faroe Islands	34154.0	34572.0	34963.0	35385.0	35841.0	36346.0	36825.0	37234.0	37630.0	...	48418.0	48465.0	48816.0	49500.0	50230.0	50955.0	51681.0	52415.0	52889.0	53090.0
200	Qatar	36385.0	40111.0	45123.0	50950.0	57531.0	64843.0	73102.0	82517.0	93022.0	...	2035501.0	2214465.0	2414573.0	2595166.0	2711755.0	2766732.0	2807235.0	2760385.0	2688235.0	2695122.0

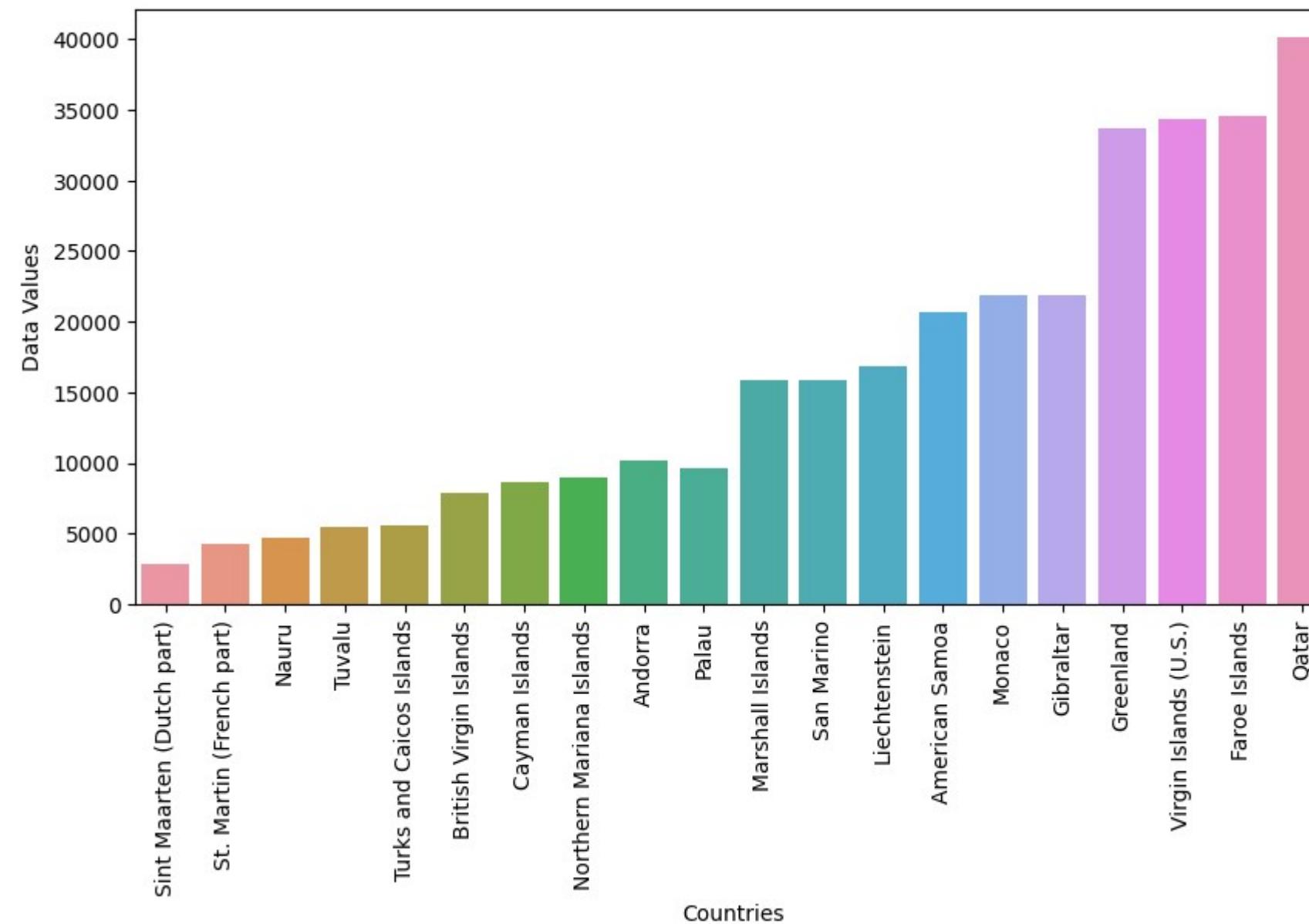
20 rows × 64 columns

```
In [25]: country_by_1960_t = country_by_1960.set_index('Country Name').T
for country_name, data_values in country_by_1960_t.iterrows():
    fig = plt.figure(figsize=(10, 5))
```

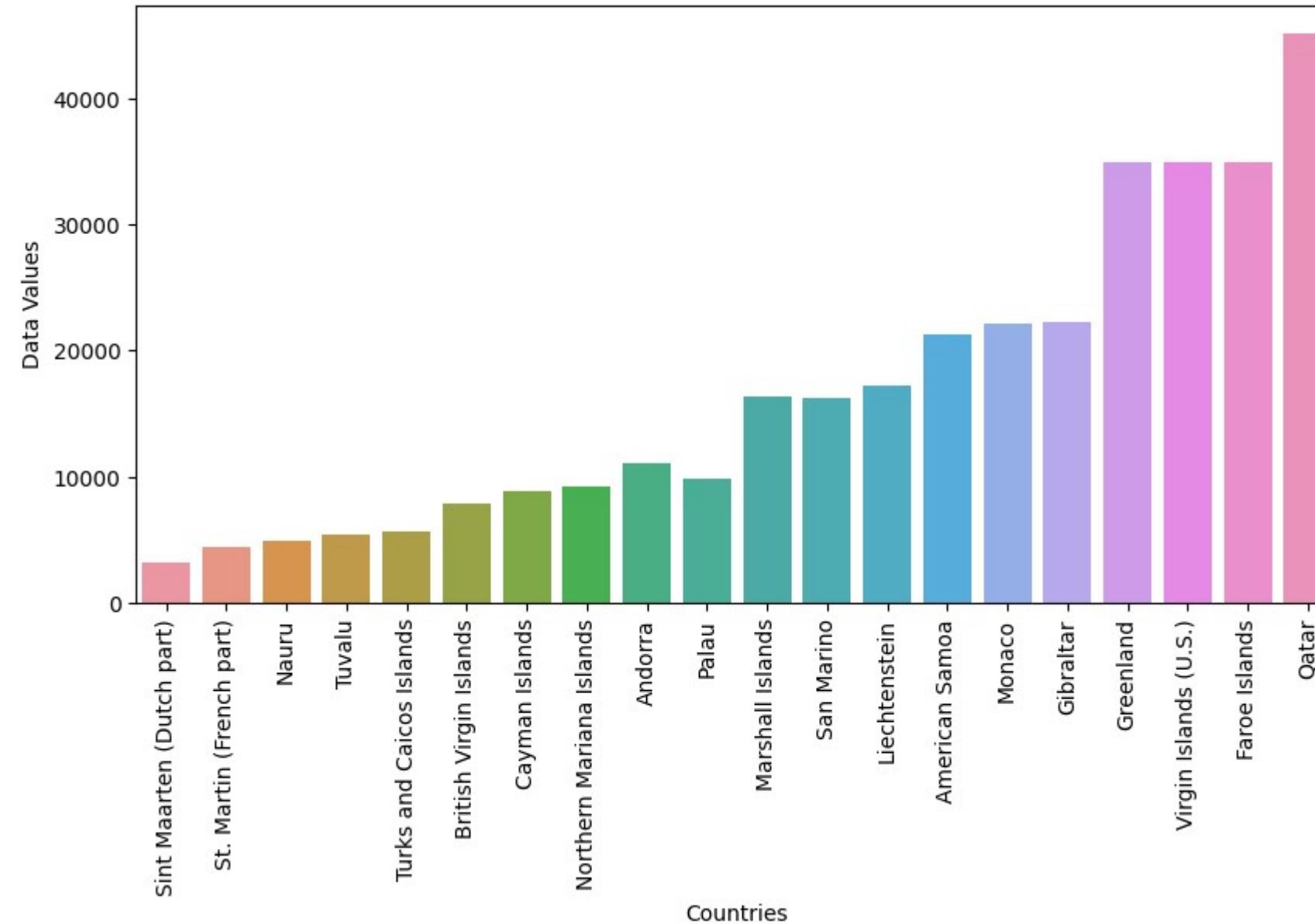
```
sns.barplot(x=data_values.index, y=data_values.values)
plt.xlabel('Countries')
plt.ylabel('Data Values')
plt.title(f'{country_name} - Data Values from 1960 to 2022')
plt.xticks(rotation=90)
plt.show()
```



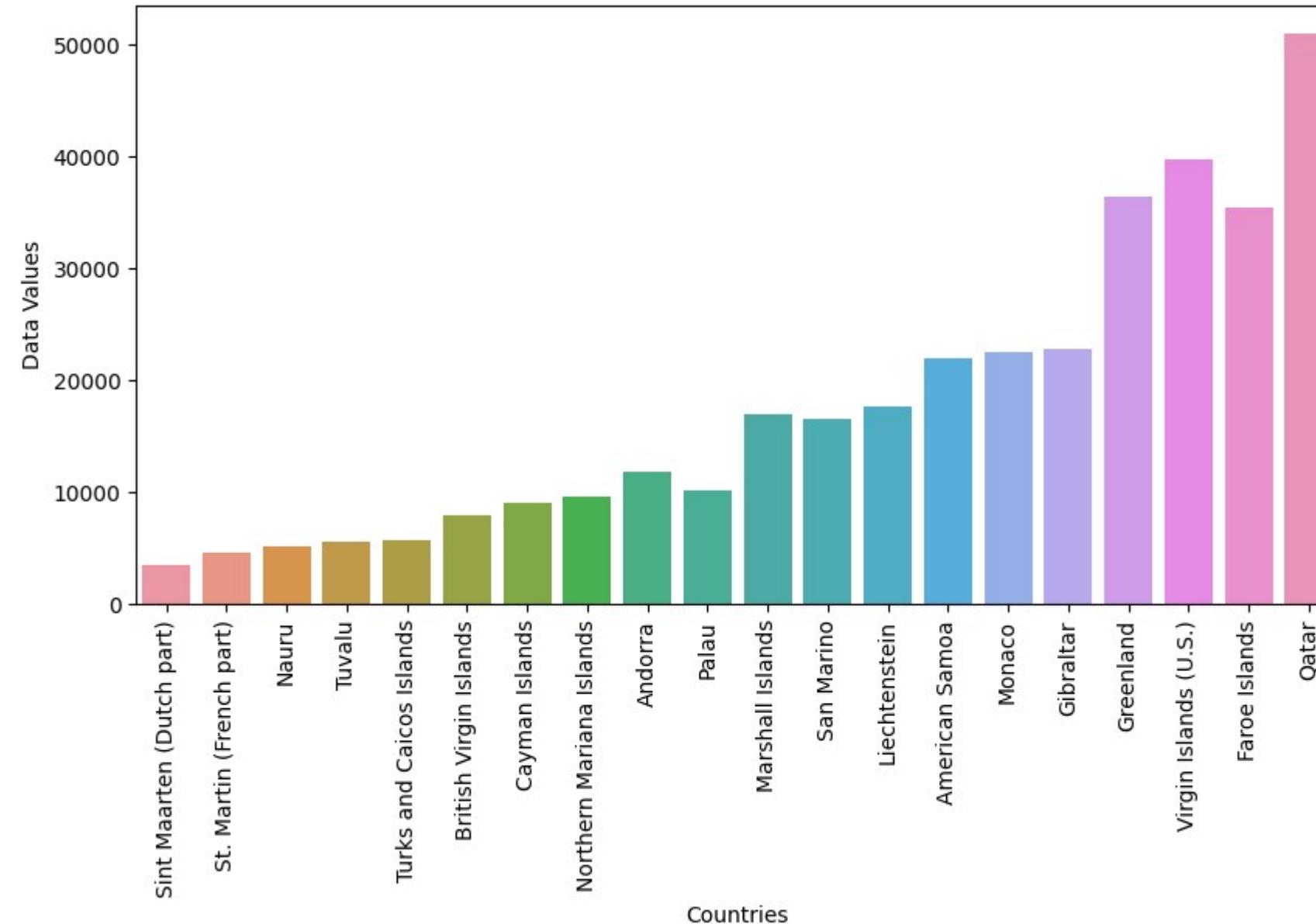
1961 - Data Values from 1960 to 2022

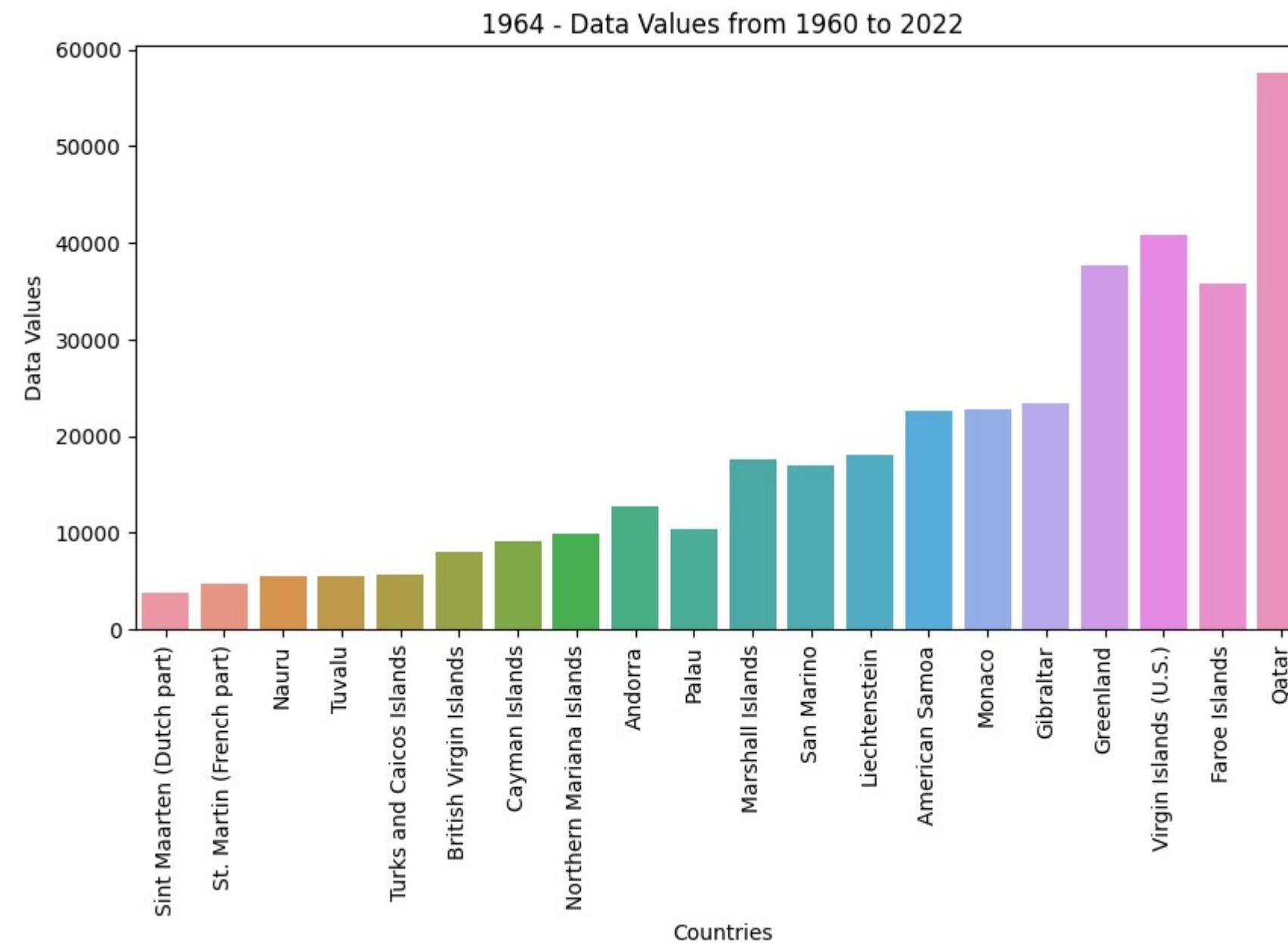


1962 - Data Values from 1960 to 2022

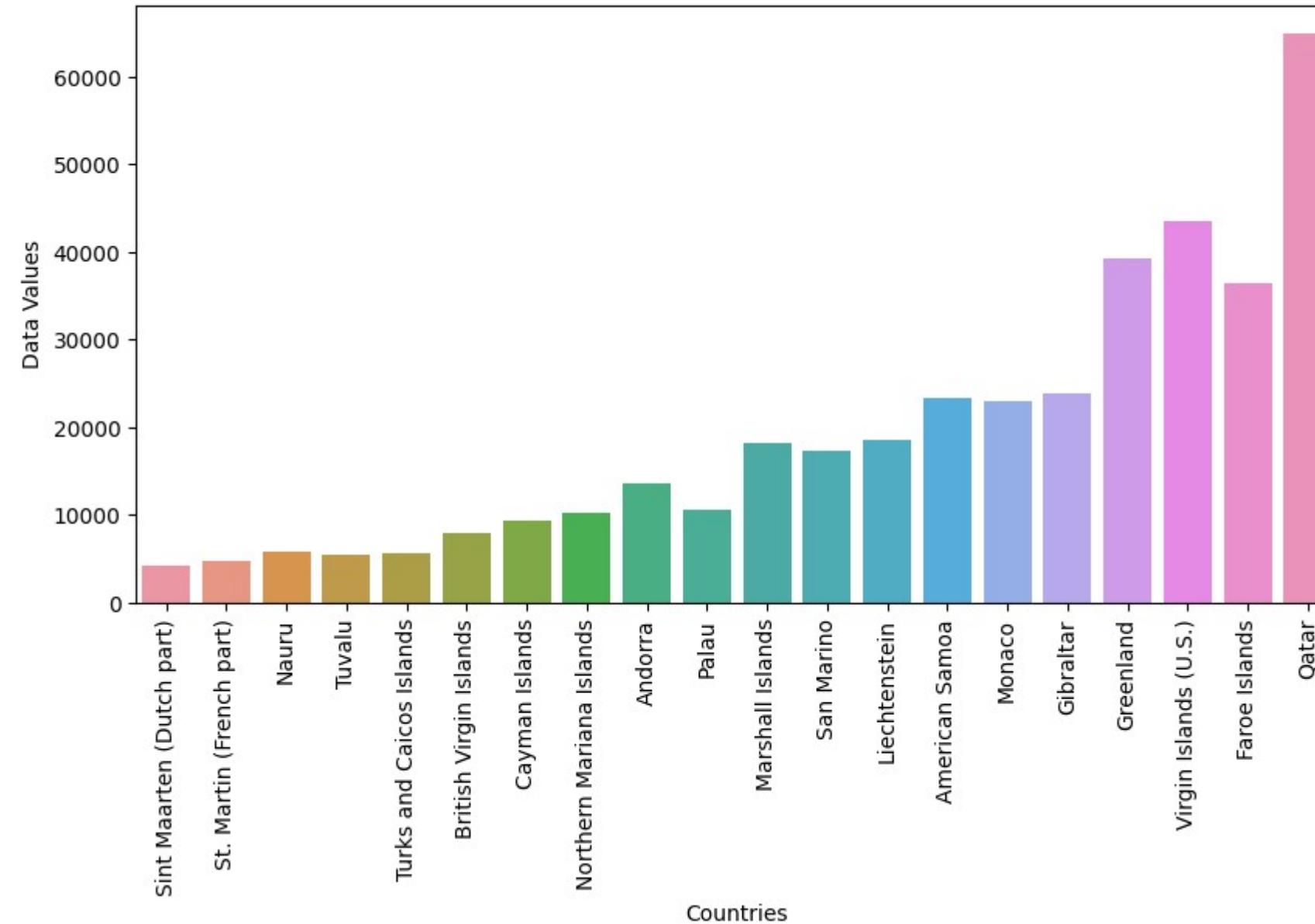


1963 - Data Values from 1960 to 2022

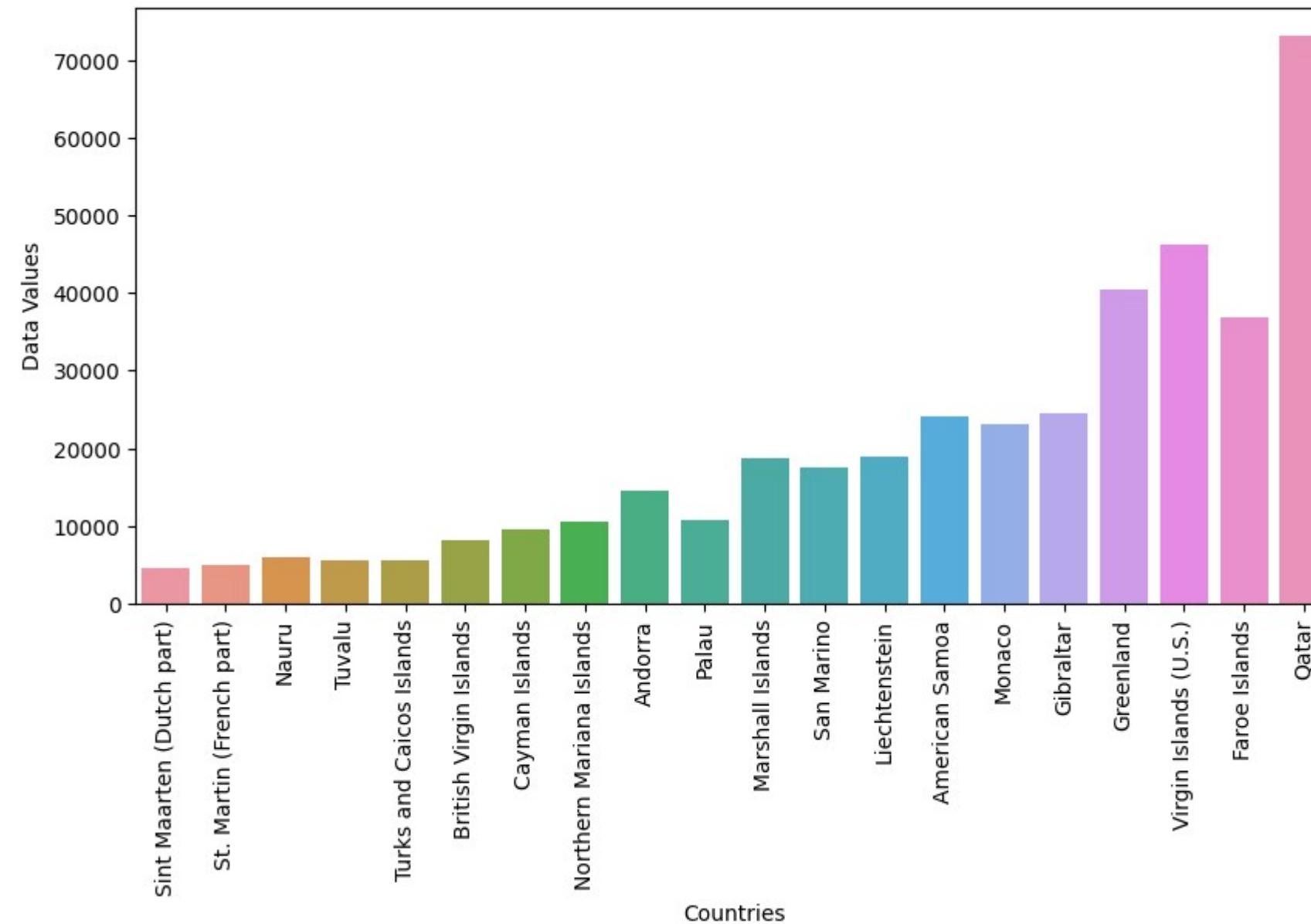




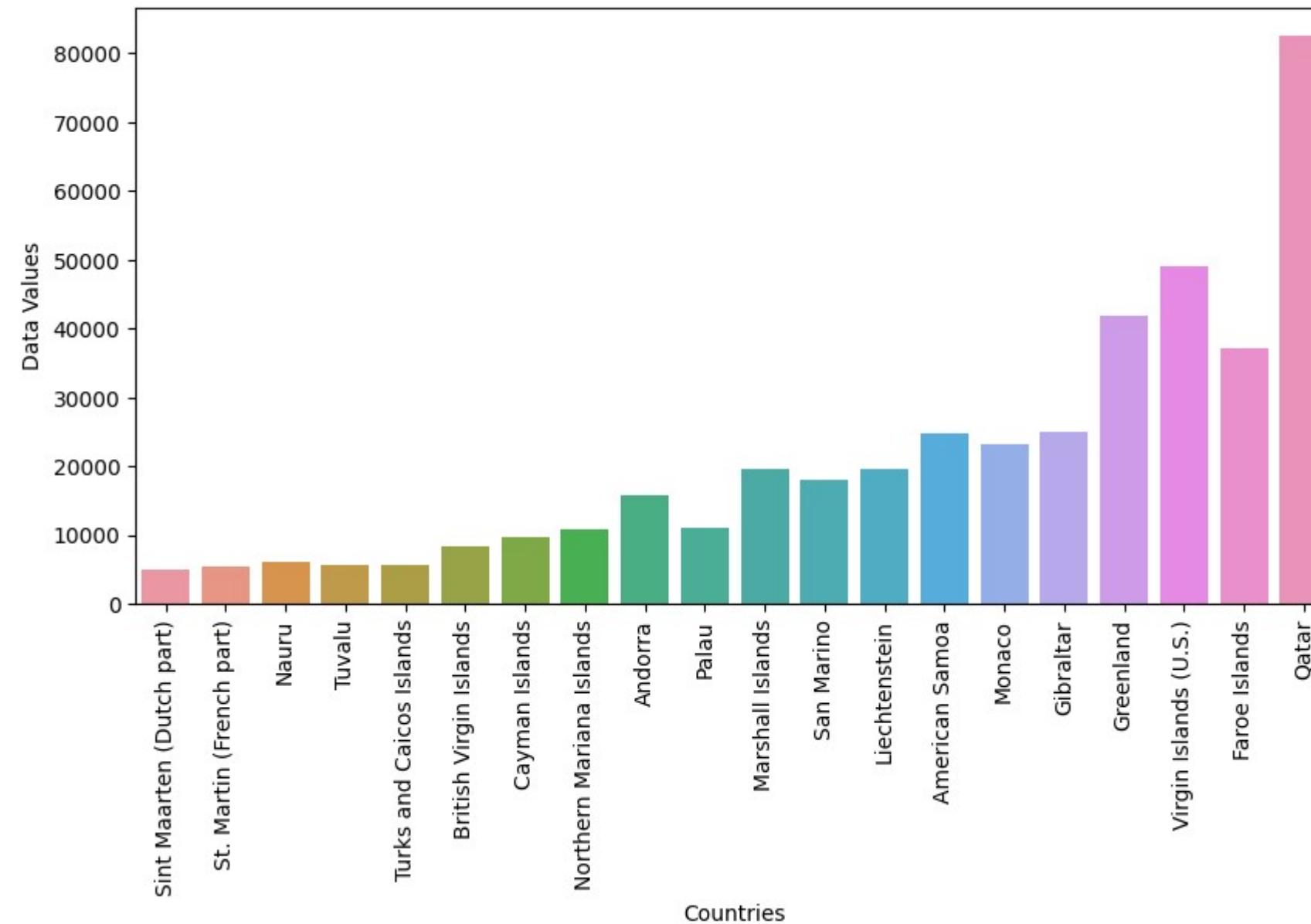
1965 - Data Values from 1960 to 2022



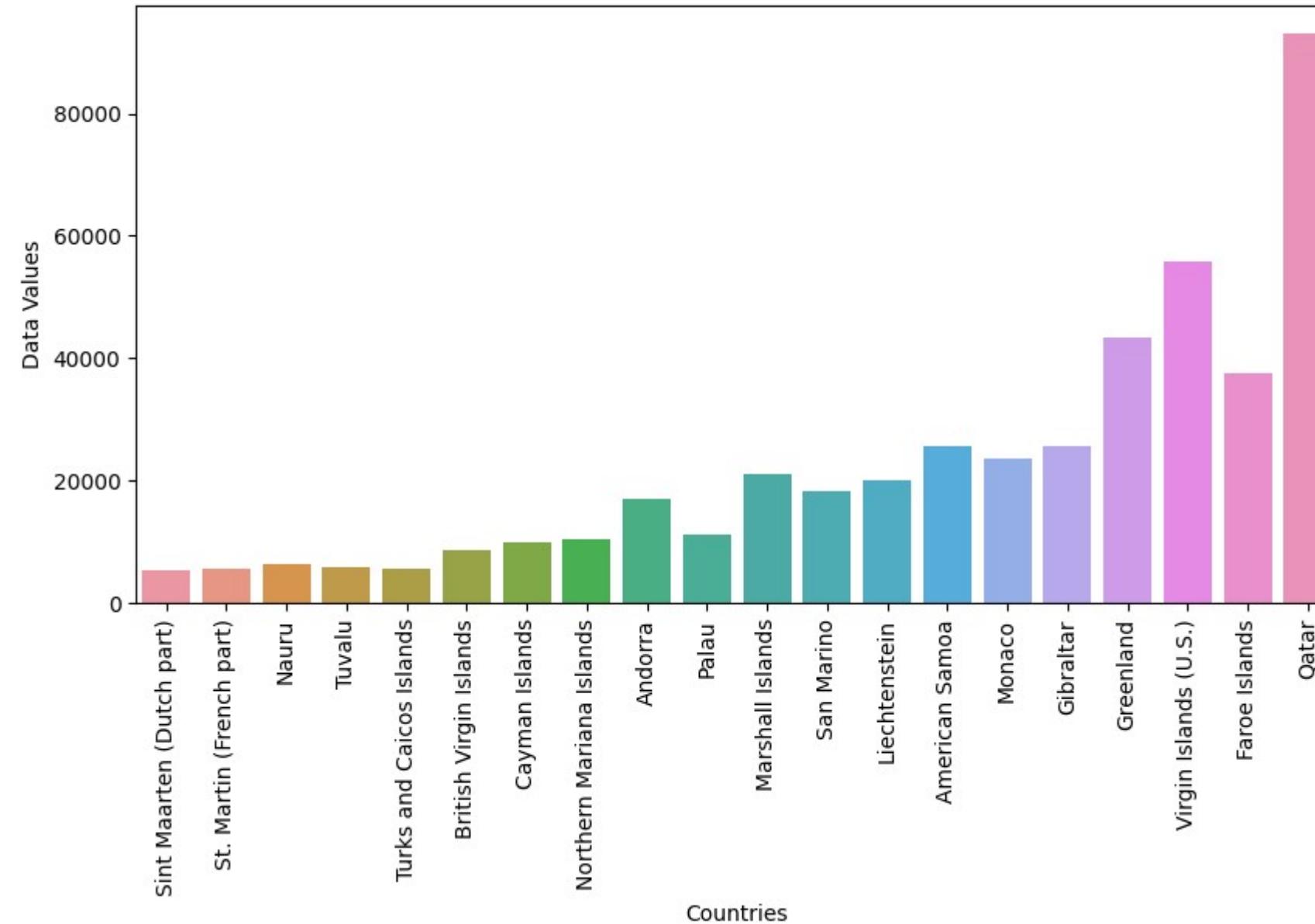
1966 - Data Values from 1960 to 2022

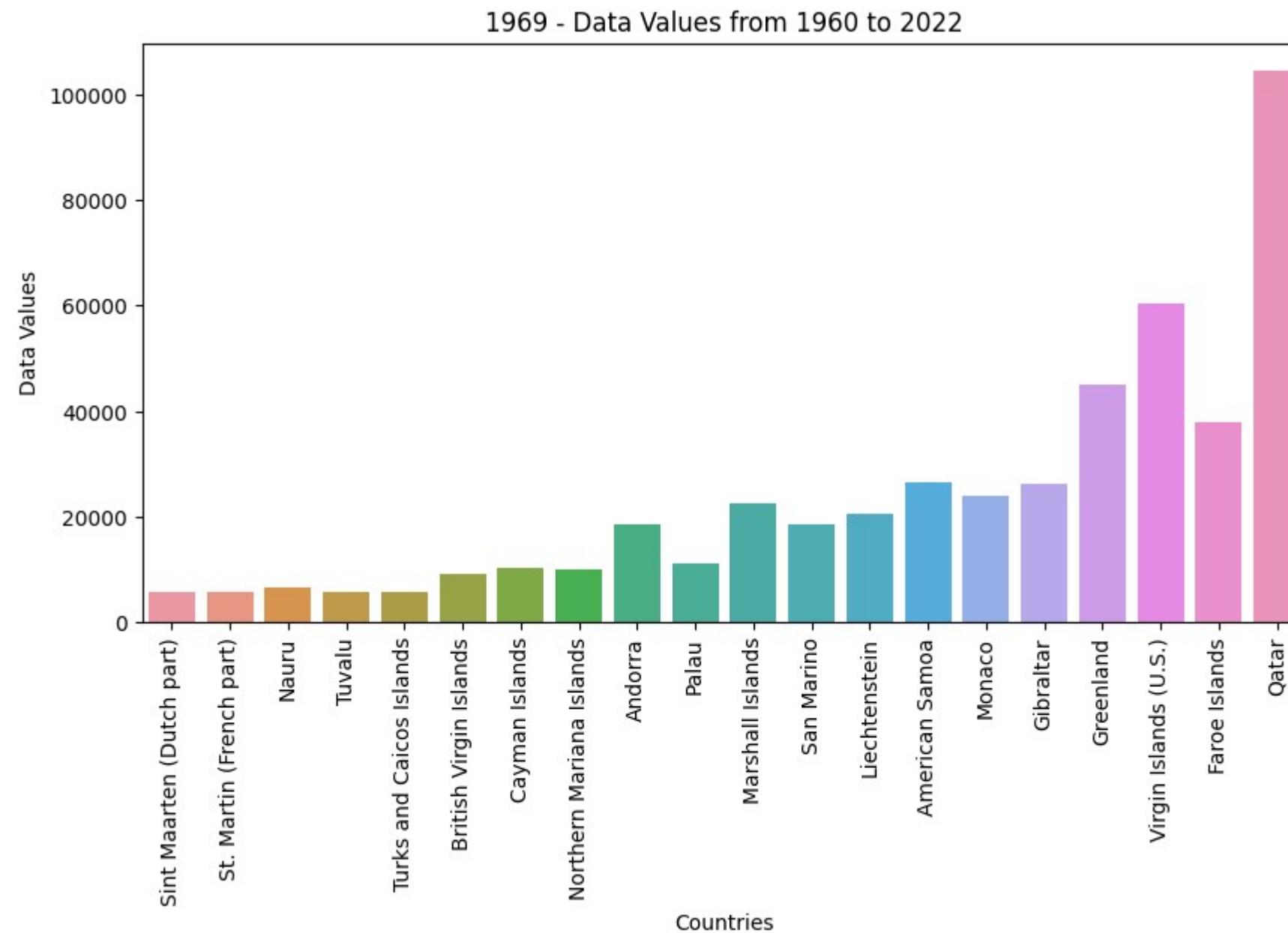


1967 - Data Values from 1960 to 2022

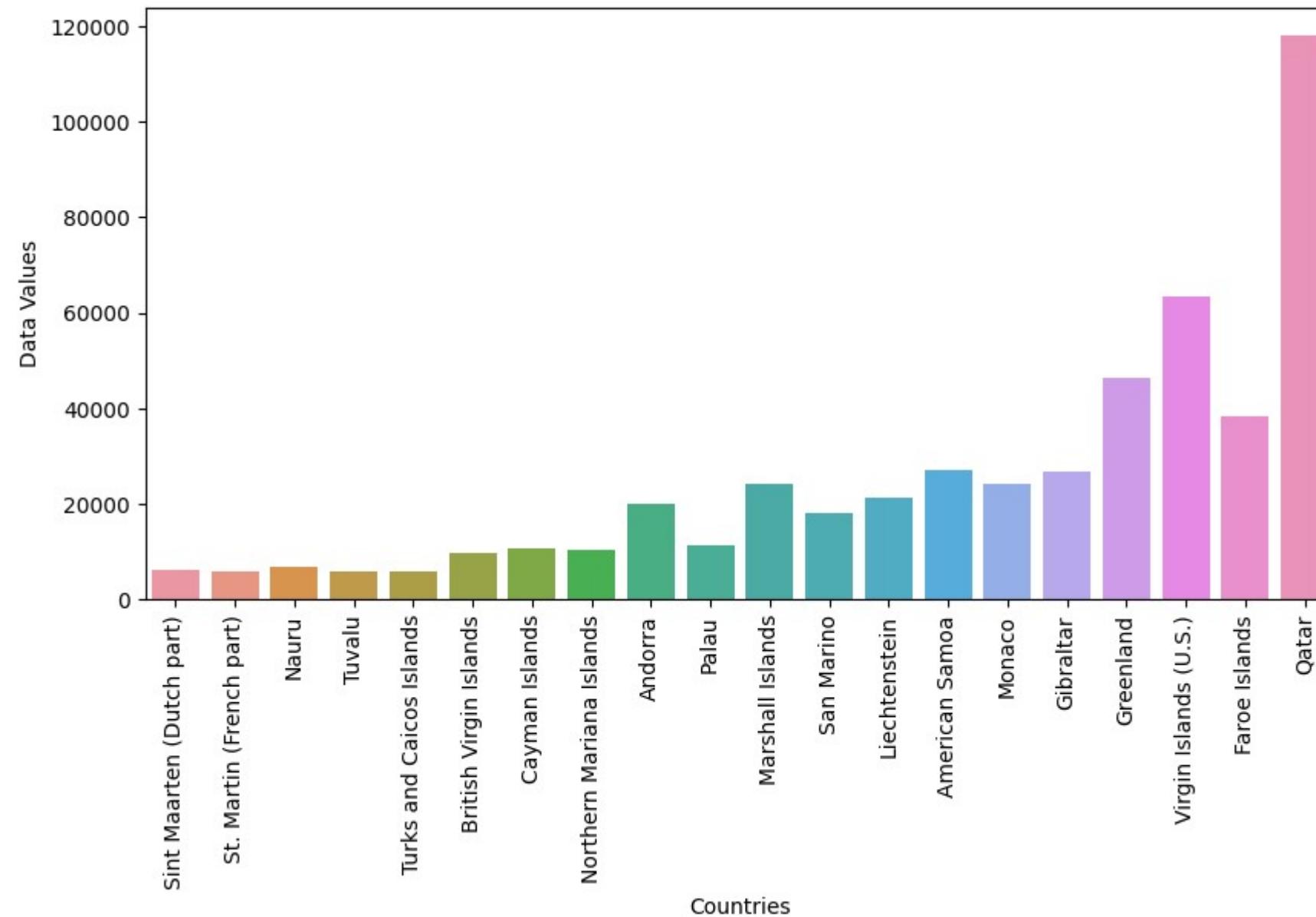


1968 - Data Values from 1960 to 2022

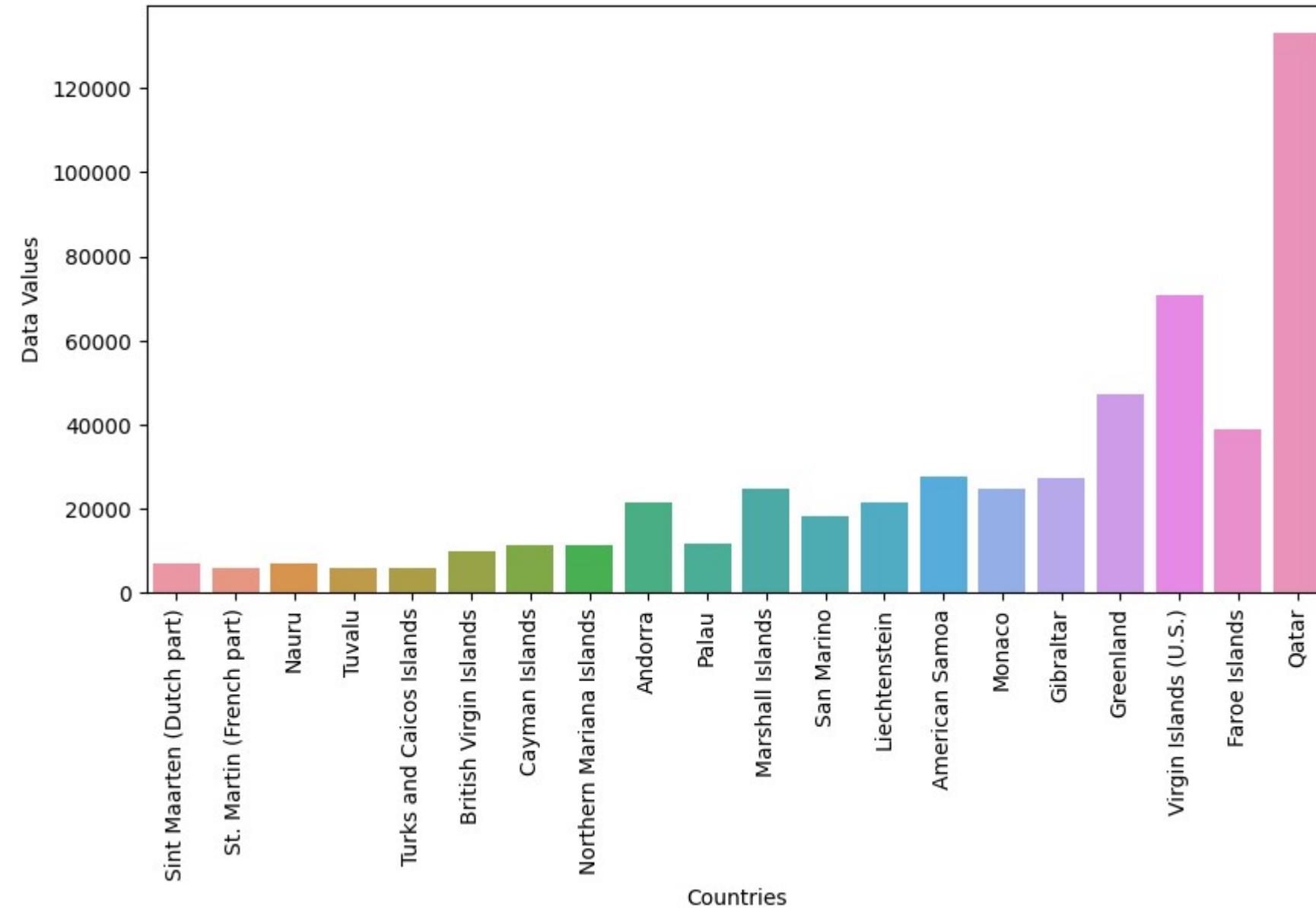




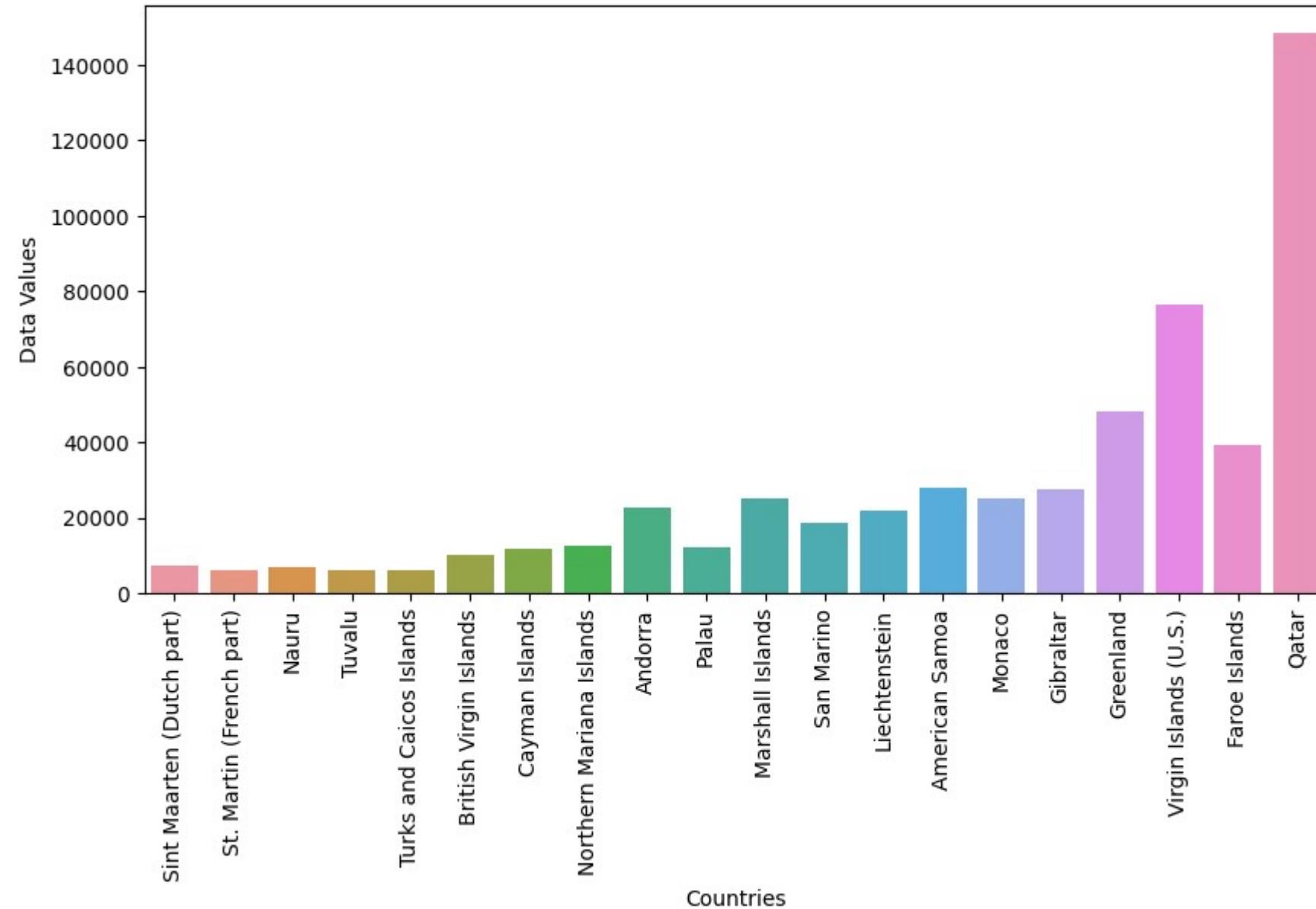
1970 - Data Values from 1960 to 2022



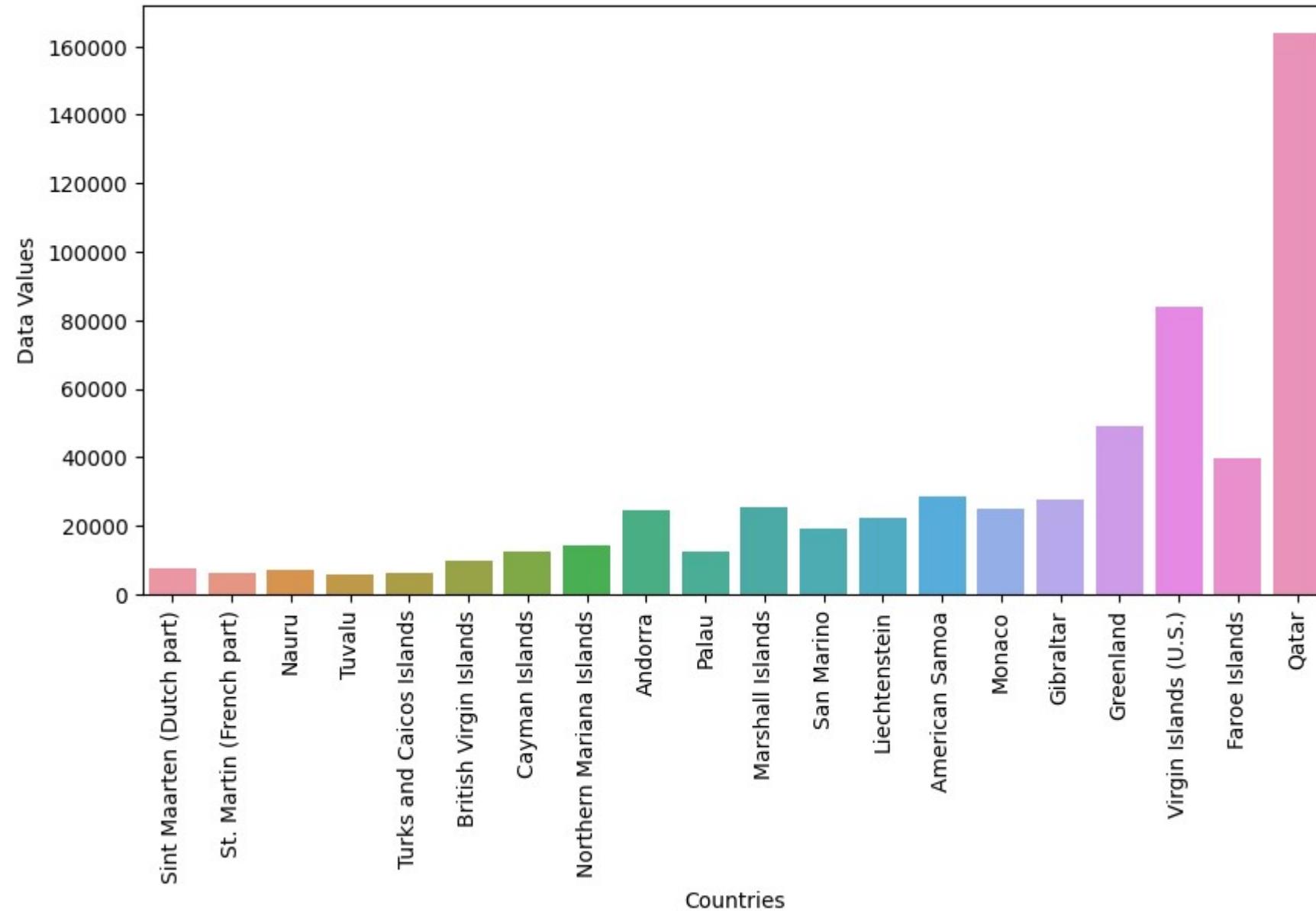
1971 - Data Values from 1960 to 2022



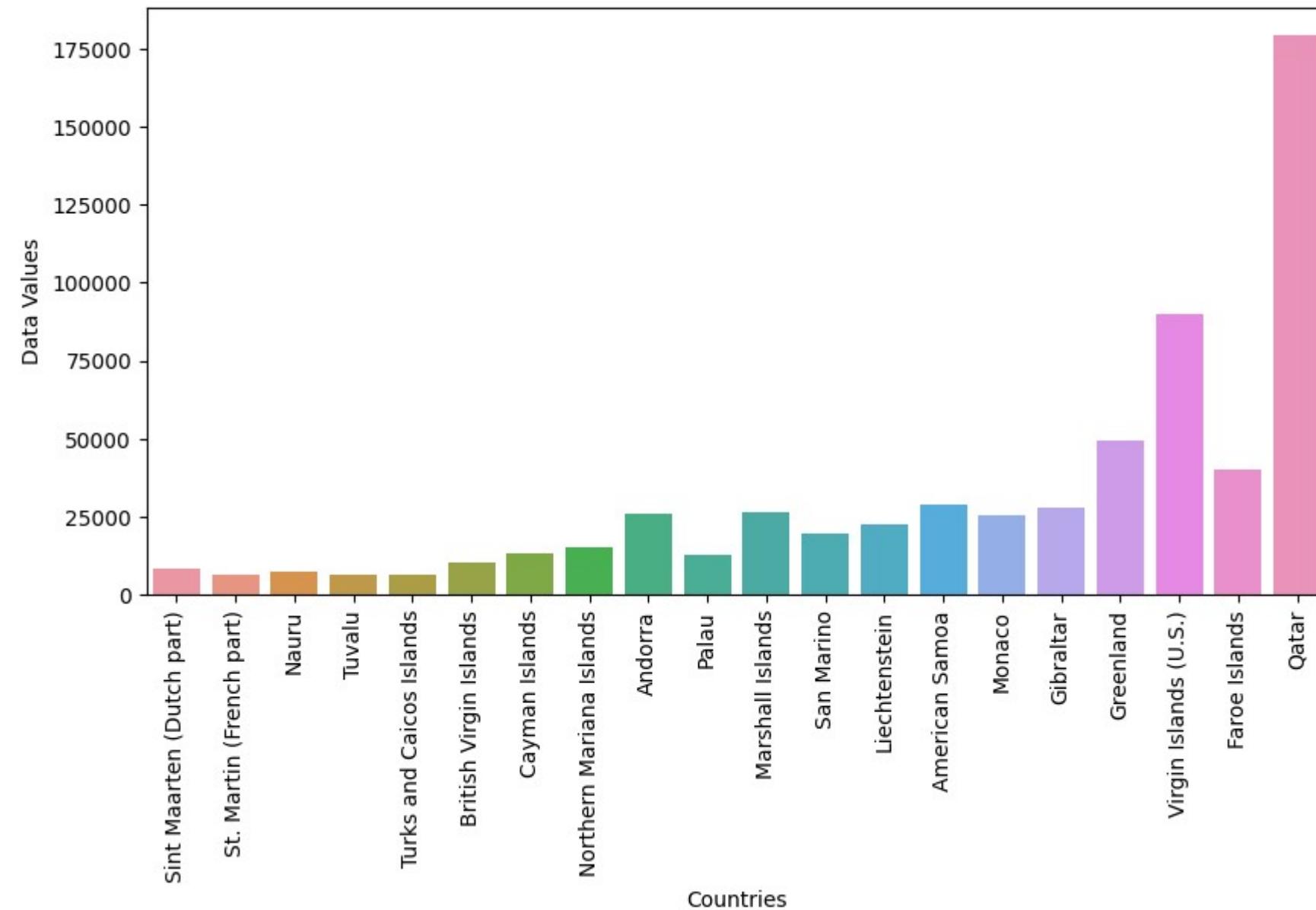
1972 - Data Values from 1960 to 2022



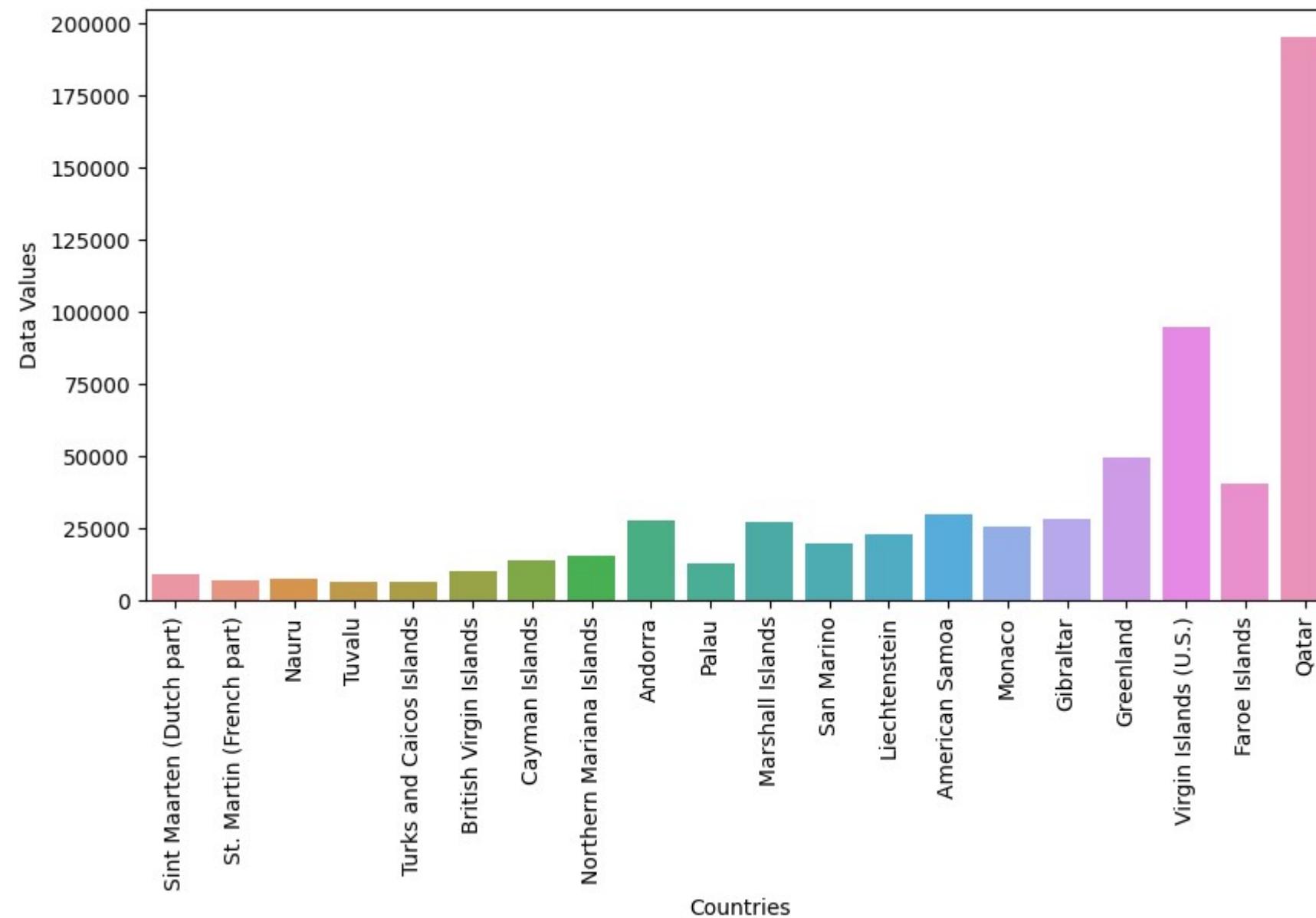
1973 - Data Values from 1960 to 2022



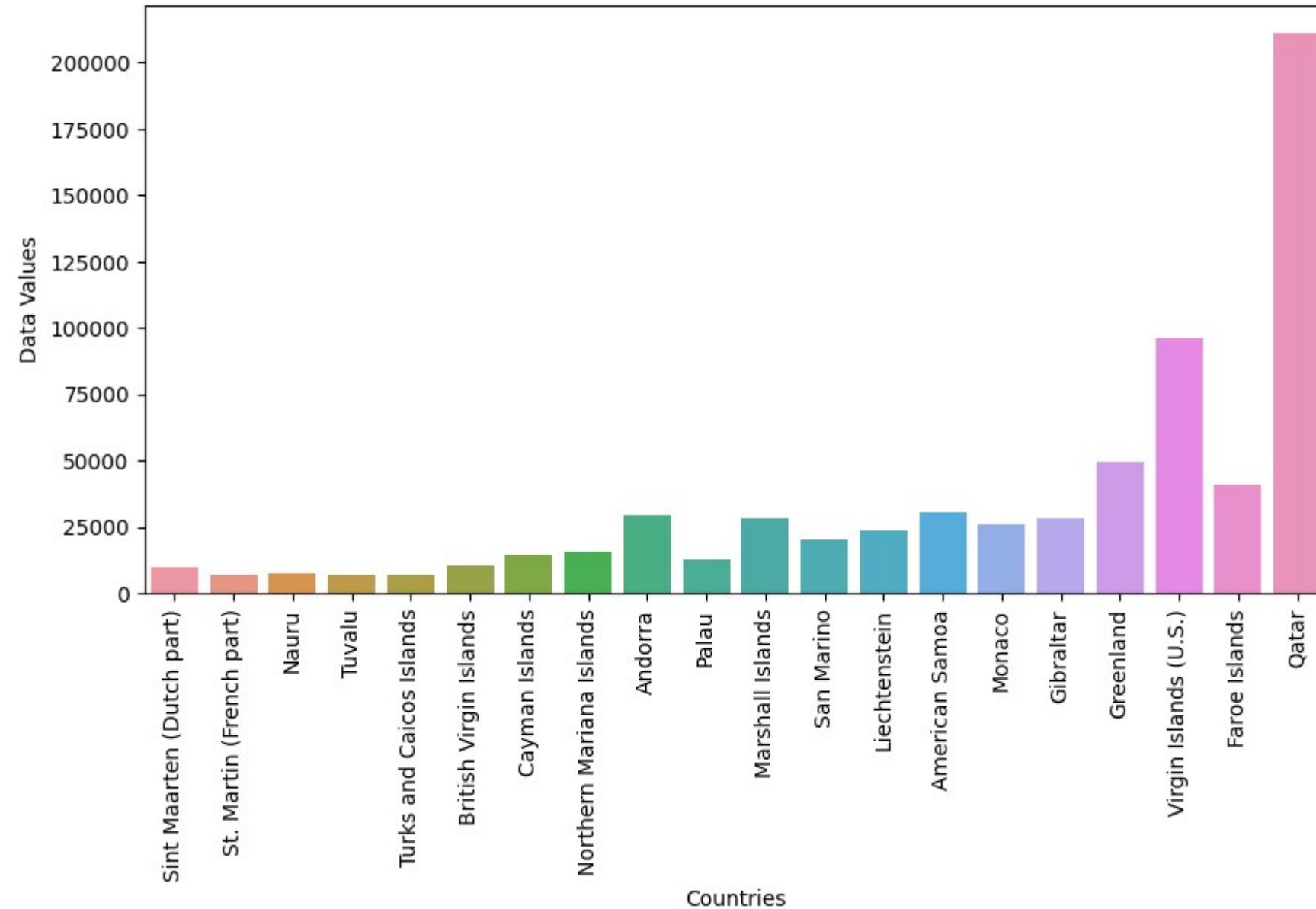
1974 - Data Values from 1960 to 2022



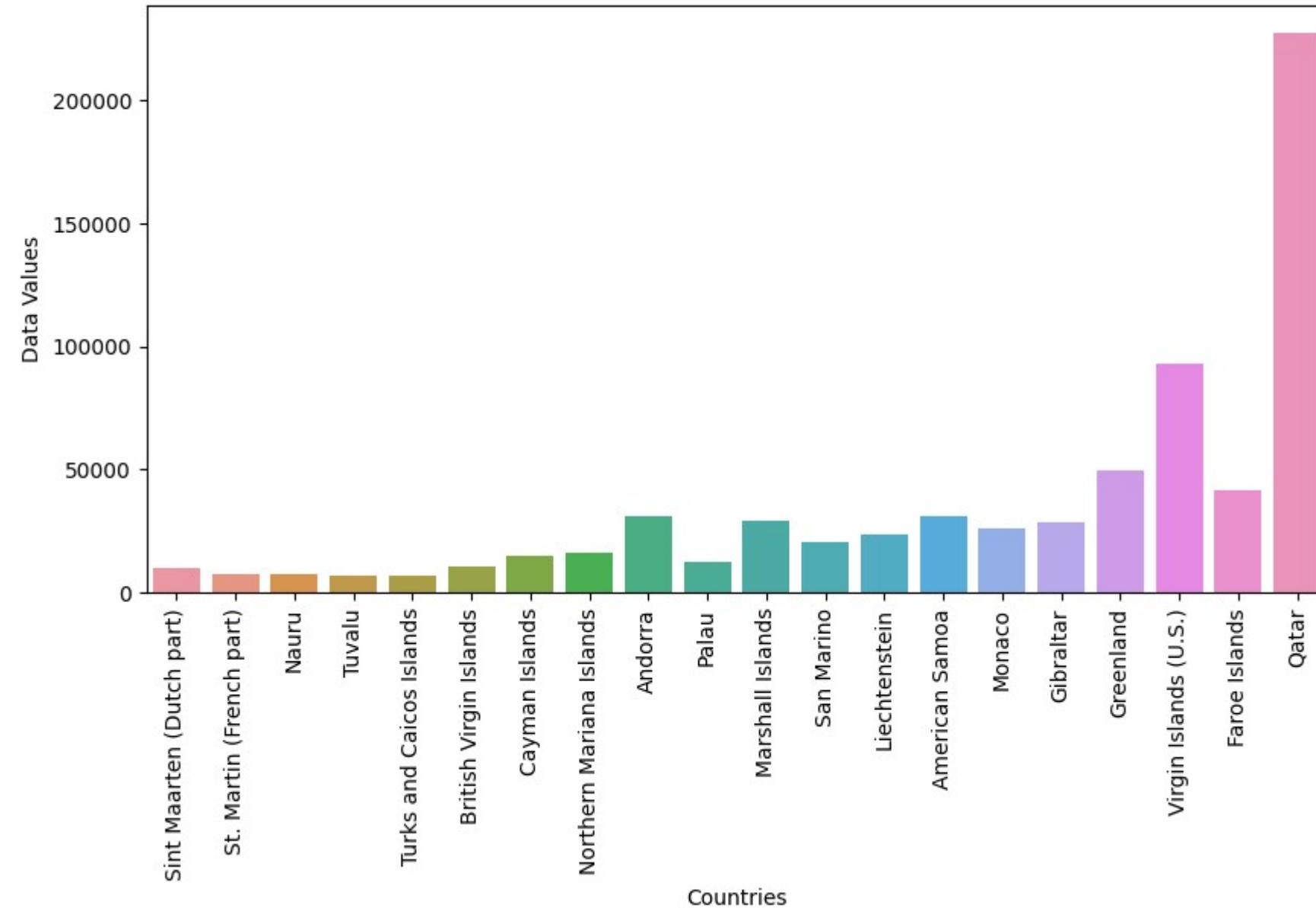
1975 - Data Values from 1960 to 2022



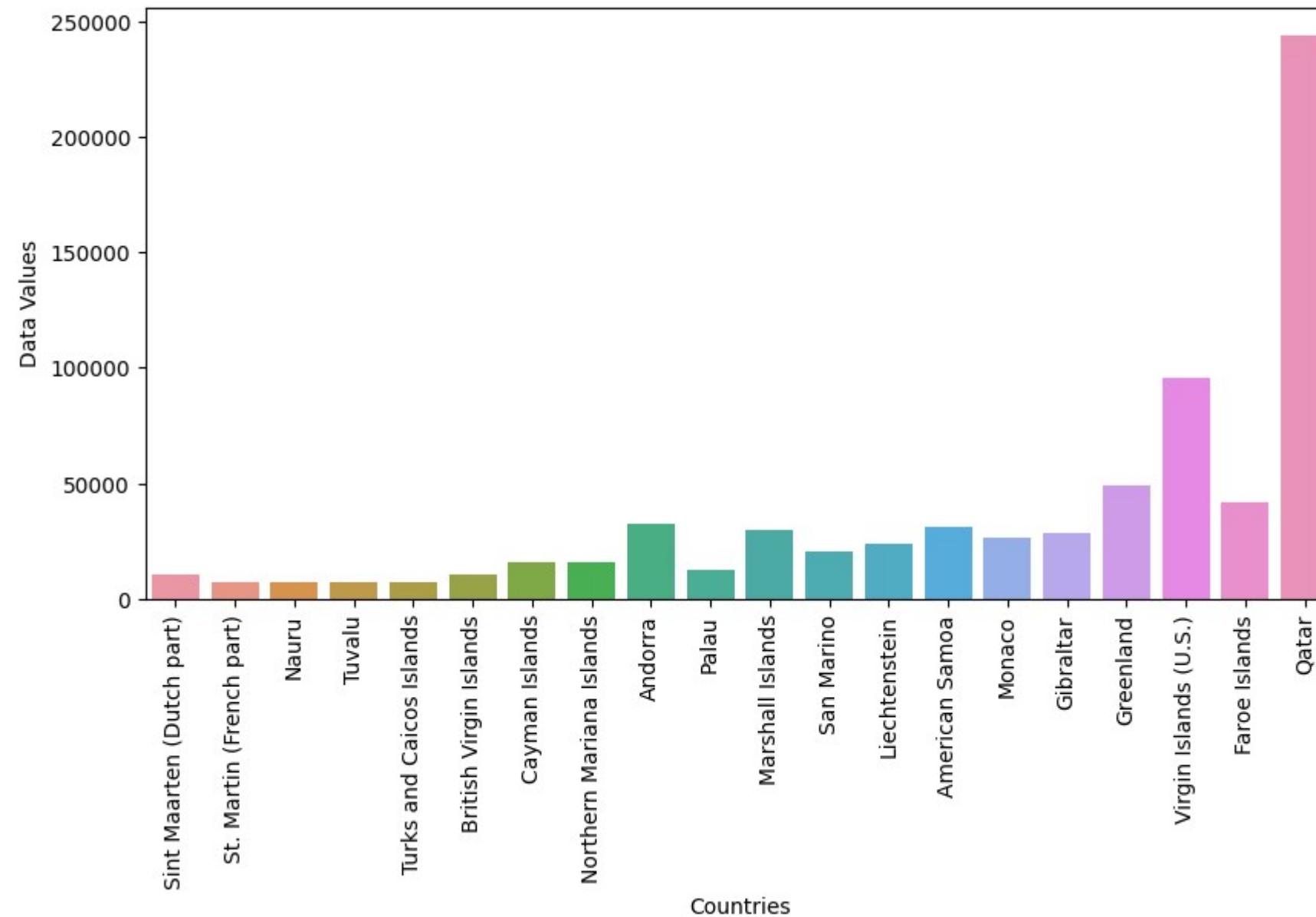
1976 - Data Values from 1960 to 2022



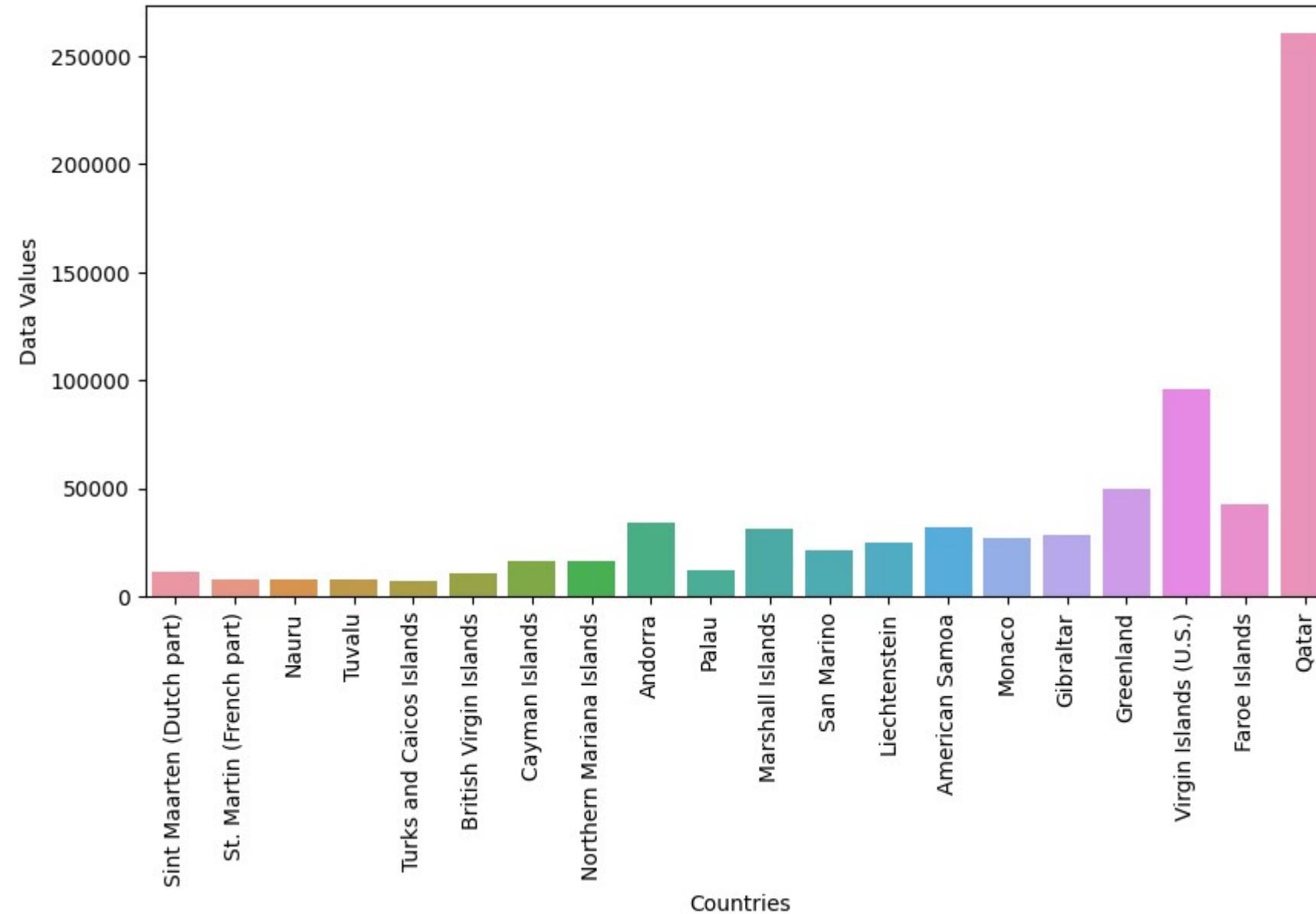
1977 - Data Values from 1960 to 2022



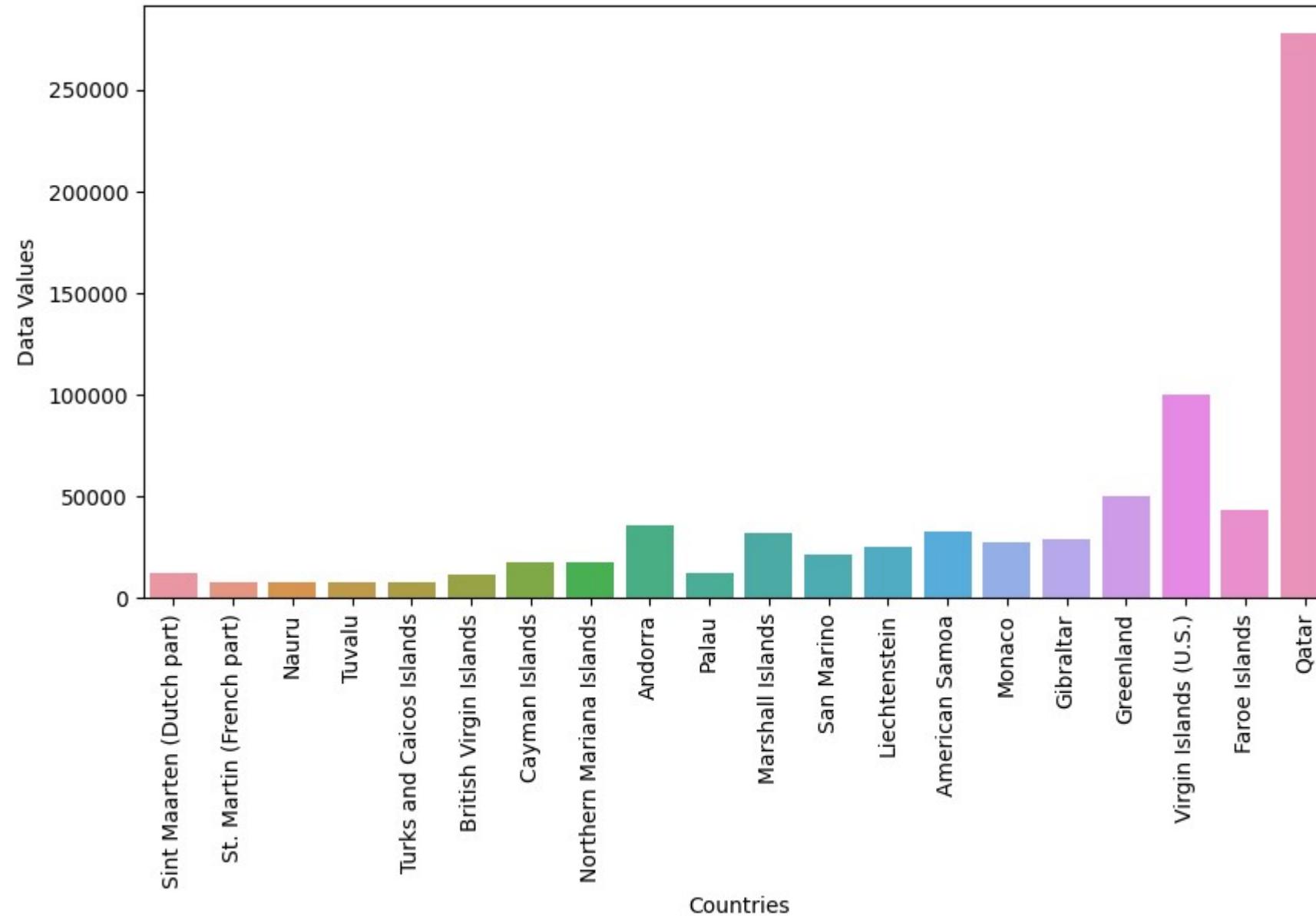
1978 - Data Values from 1960 to 2022



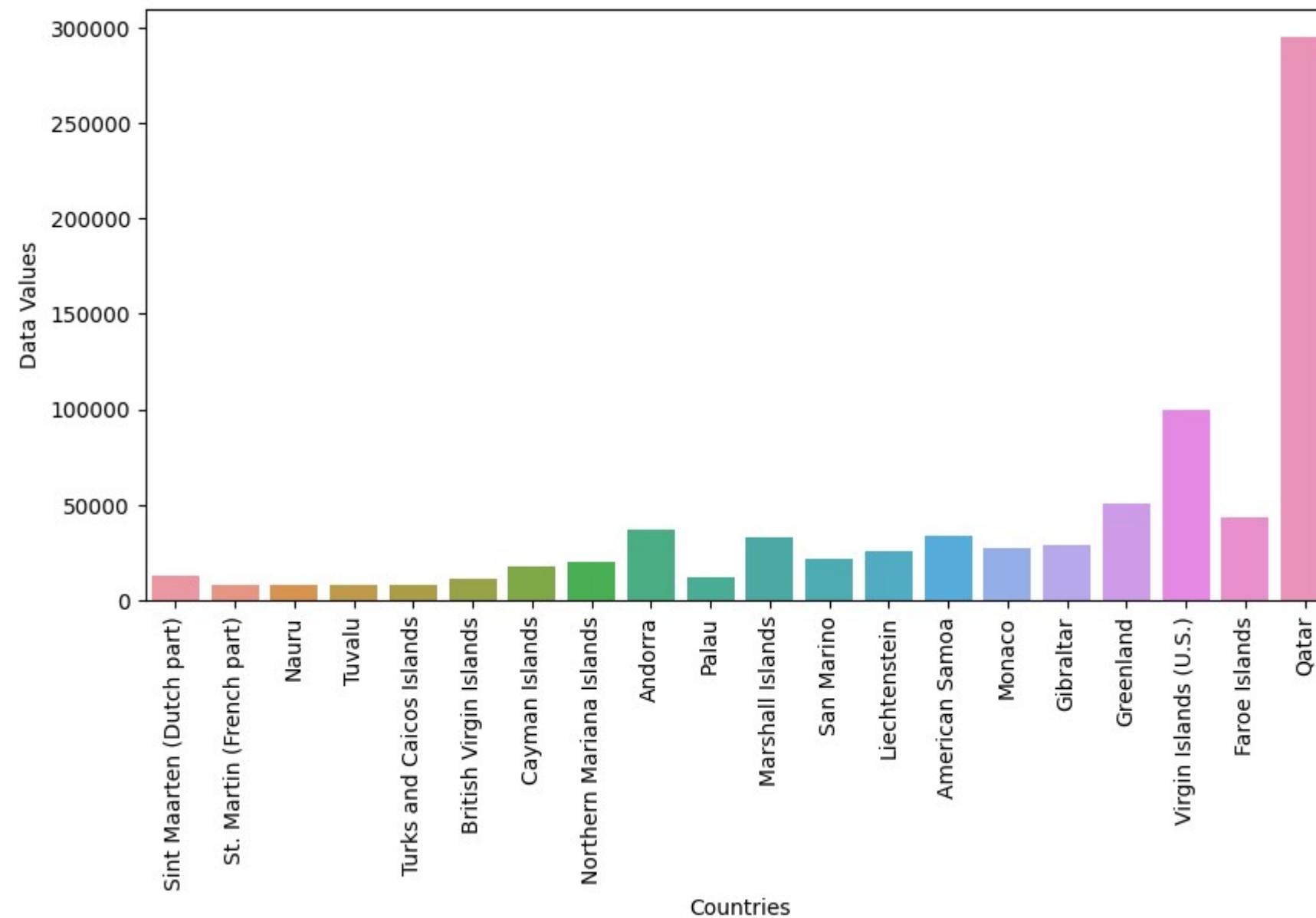
1979 - Data Values from 1960 to 2022



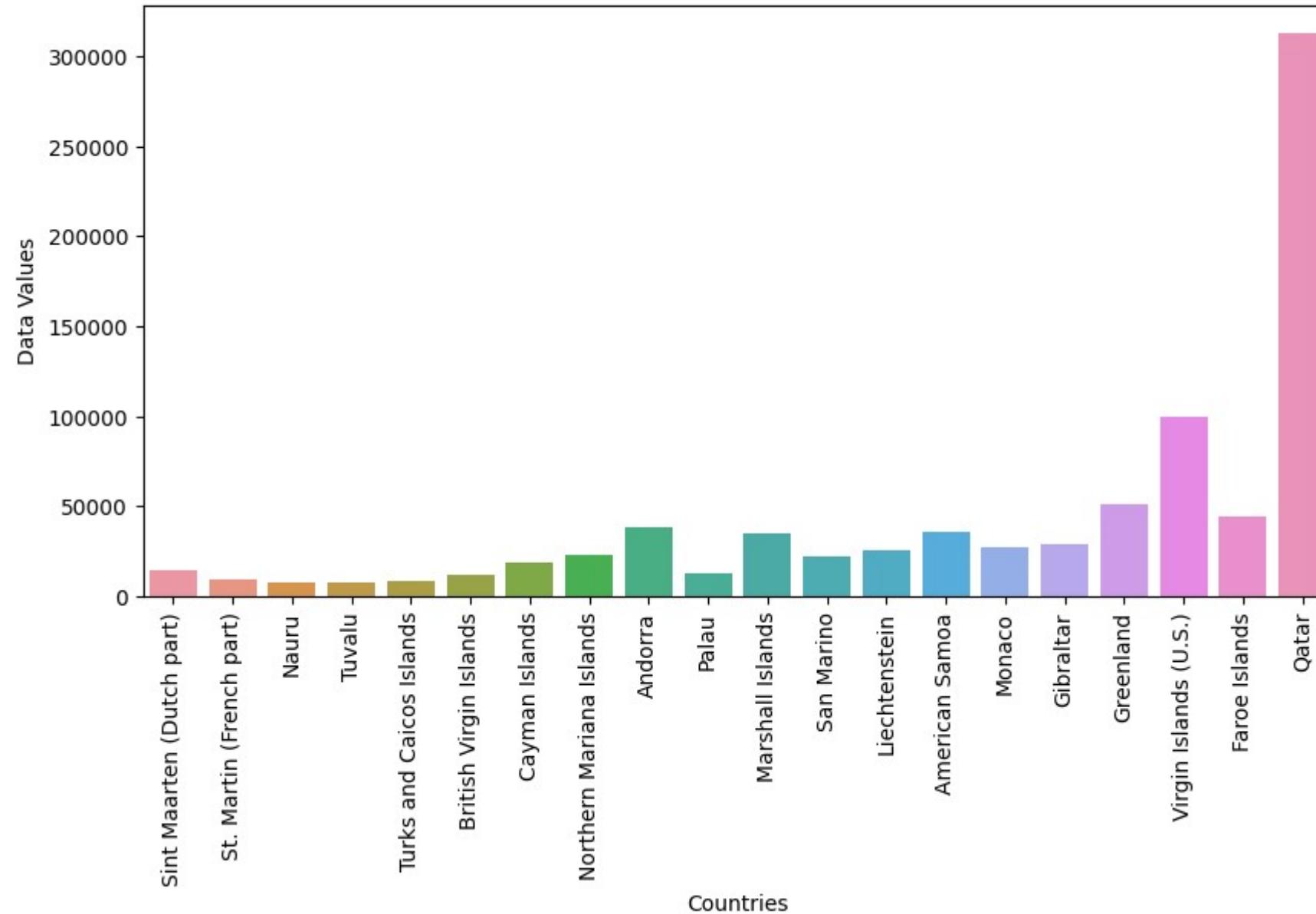
1980 - Data Values from 1960 to 2022



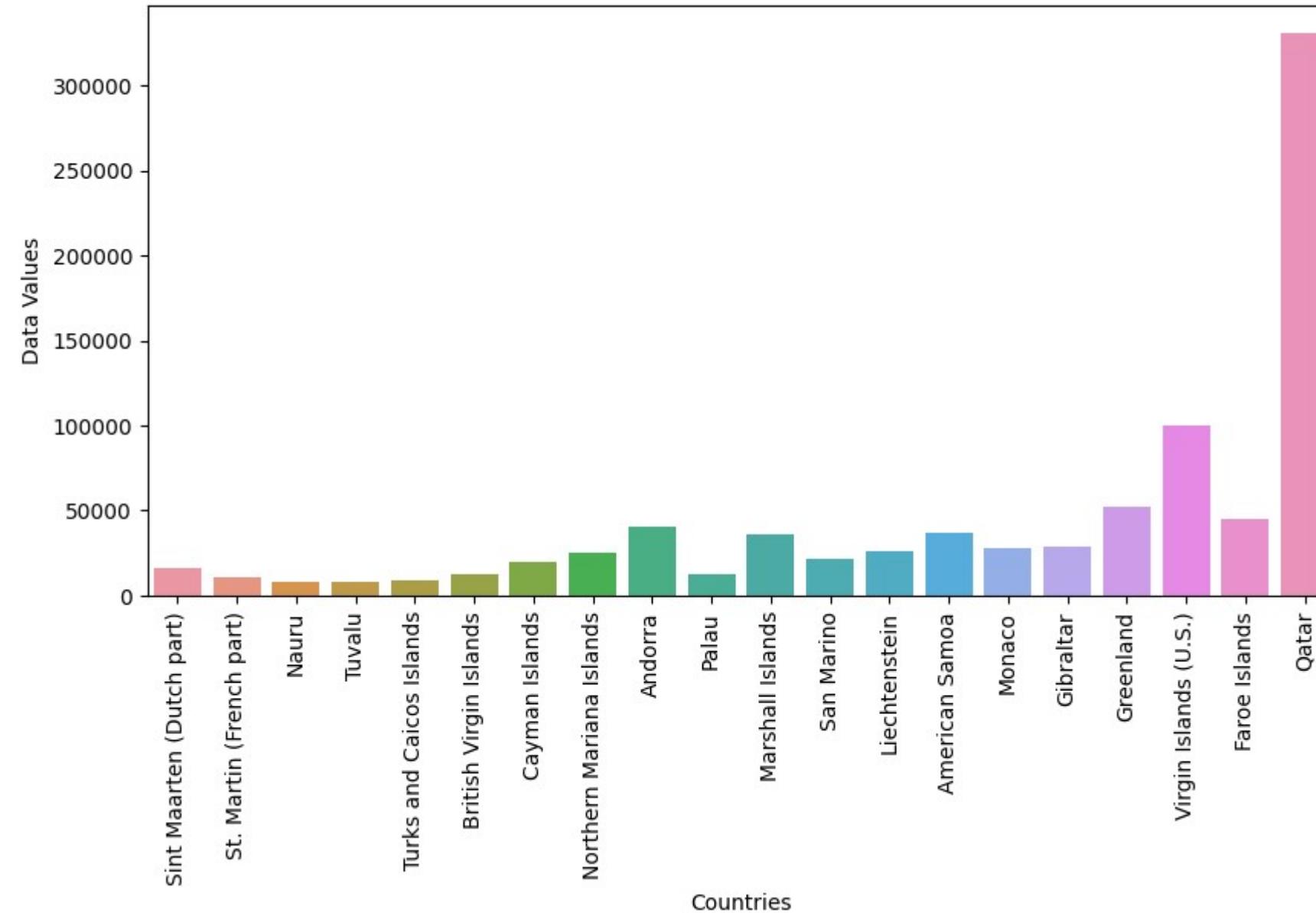
1981 - Data Values from 1960 to 2022

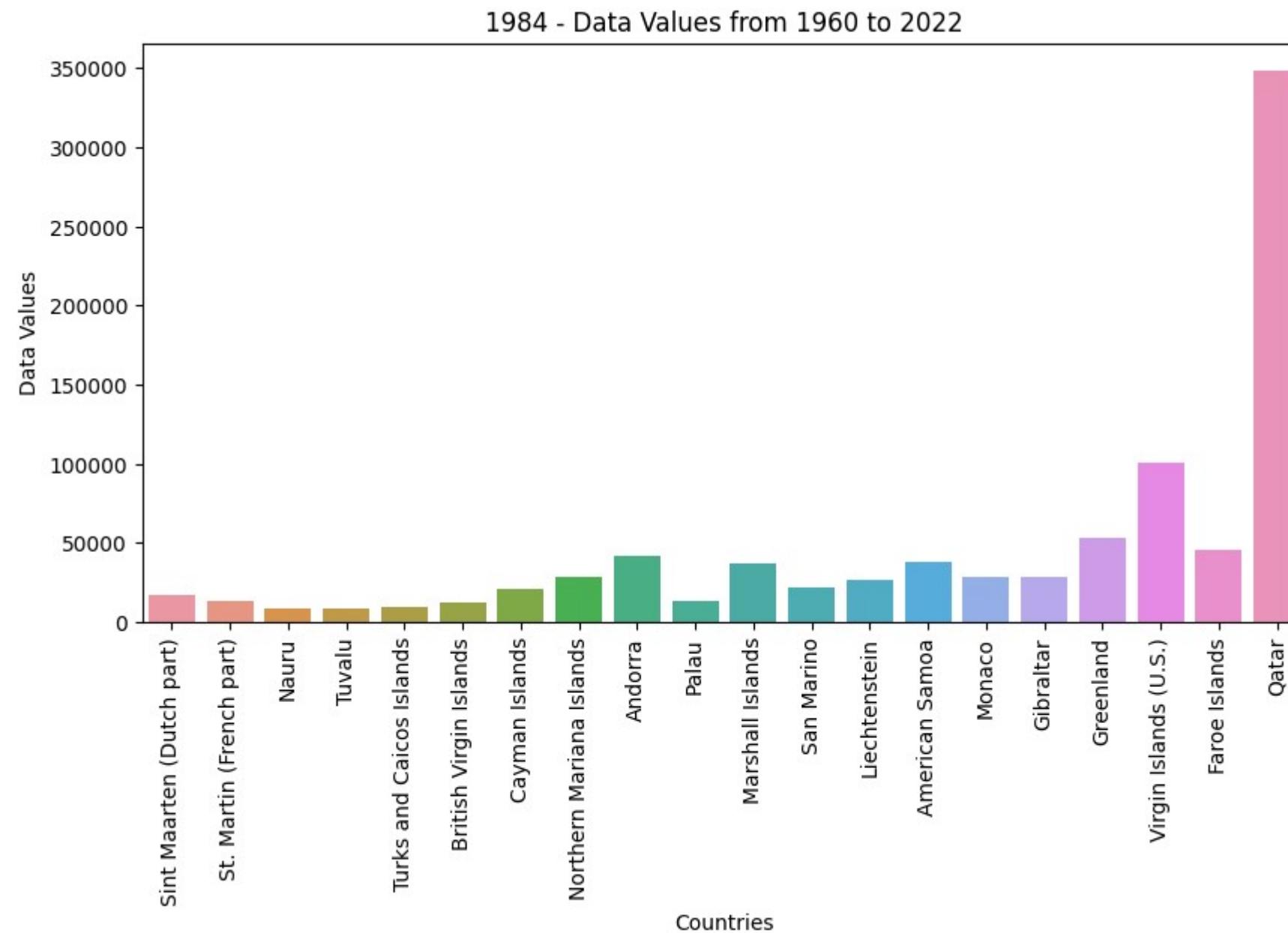


1982 - Data Values from 1960 to 2022

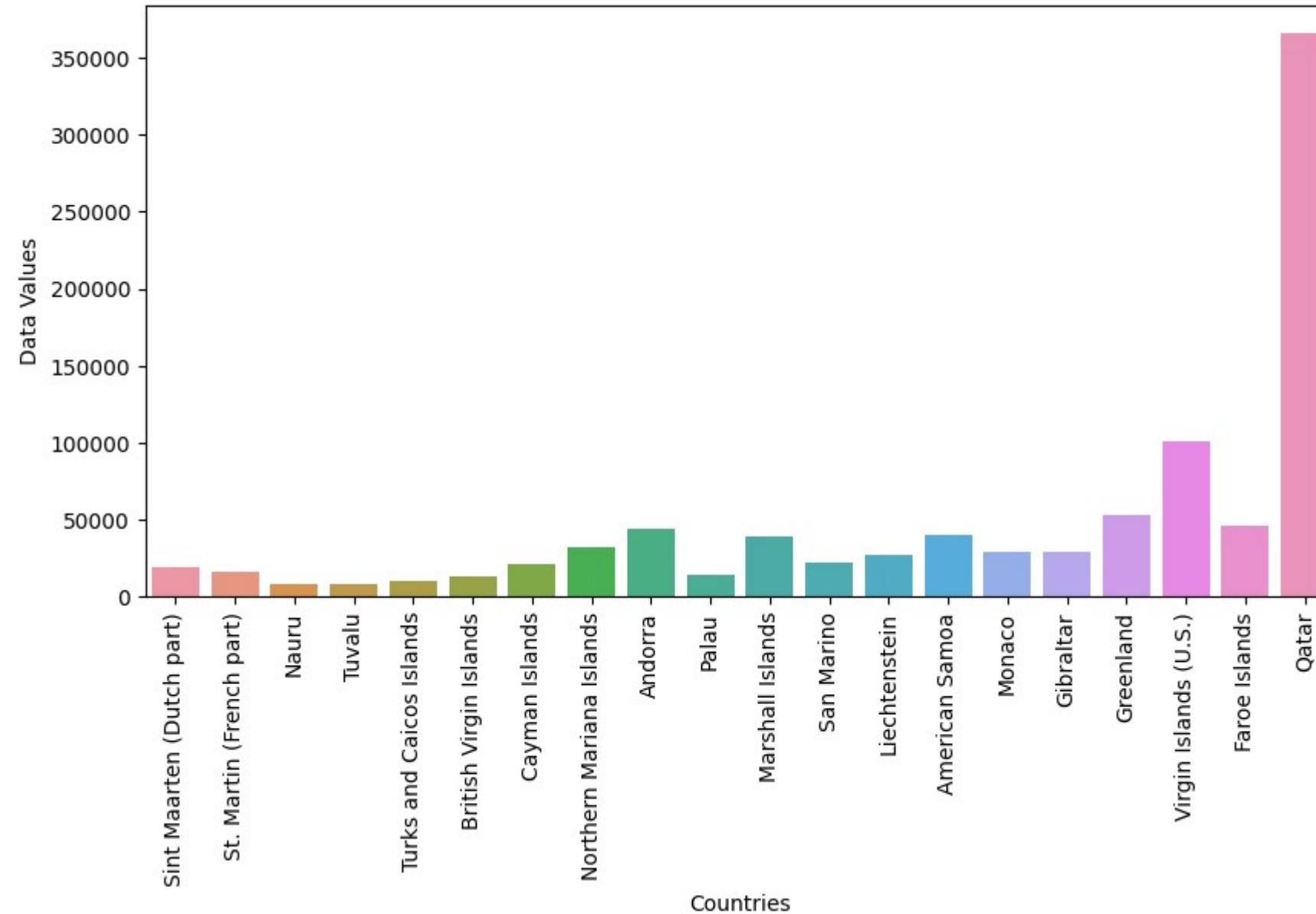


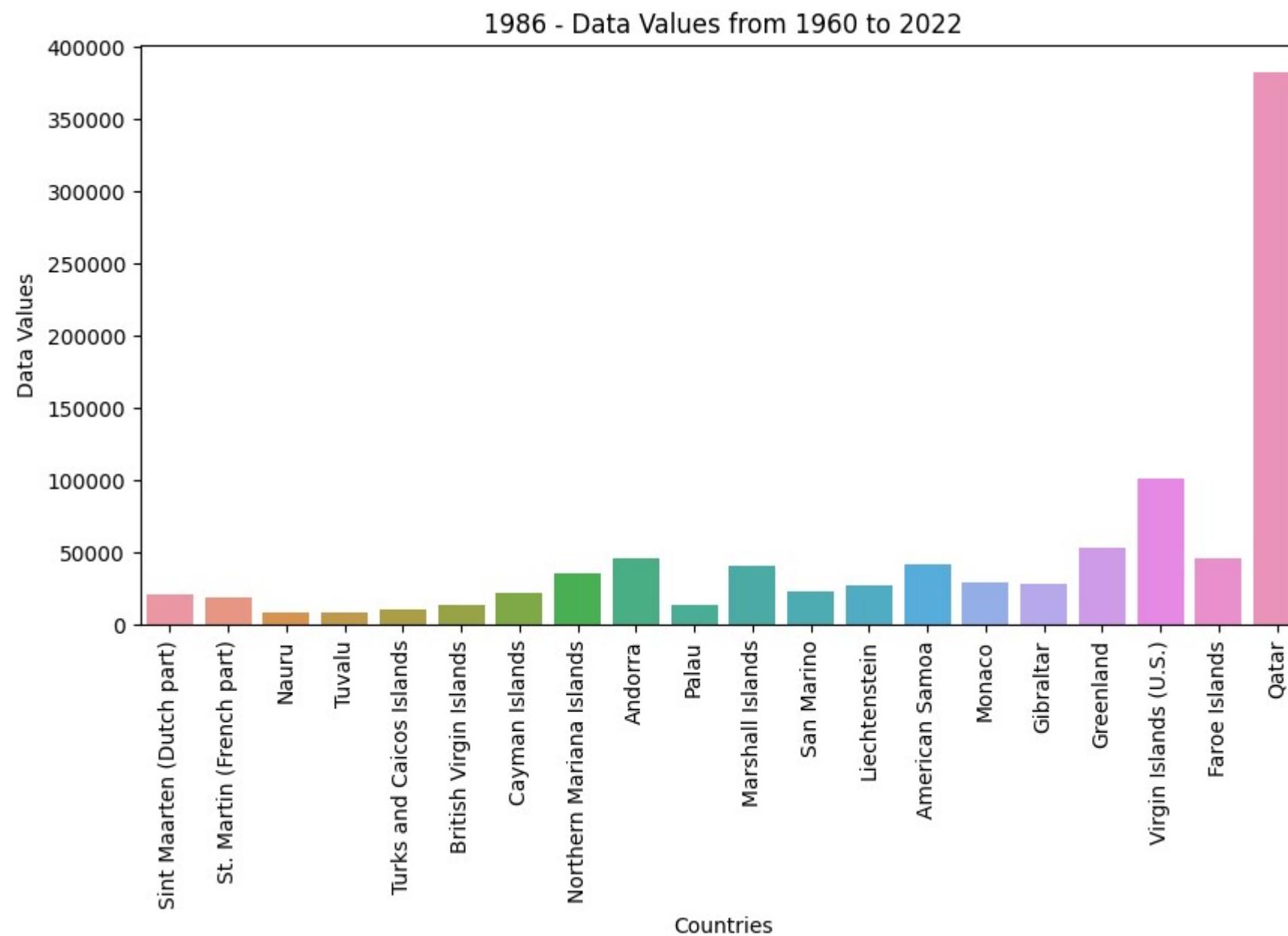
1983 - Data Values from 1960 to 2022



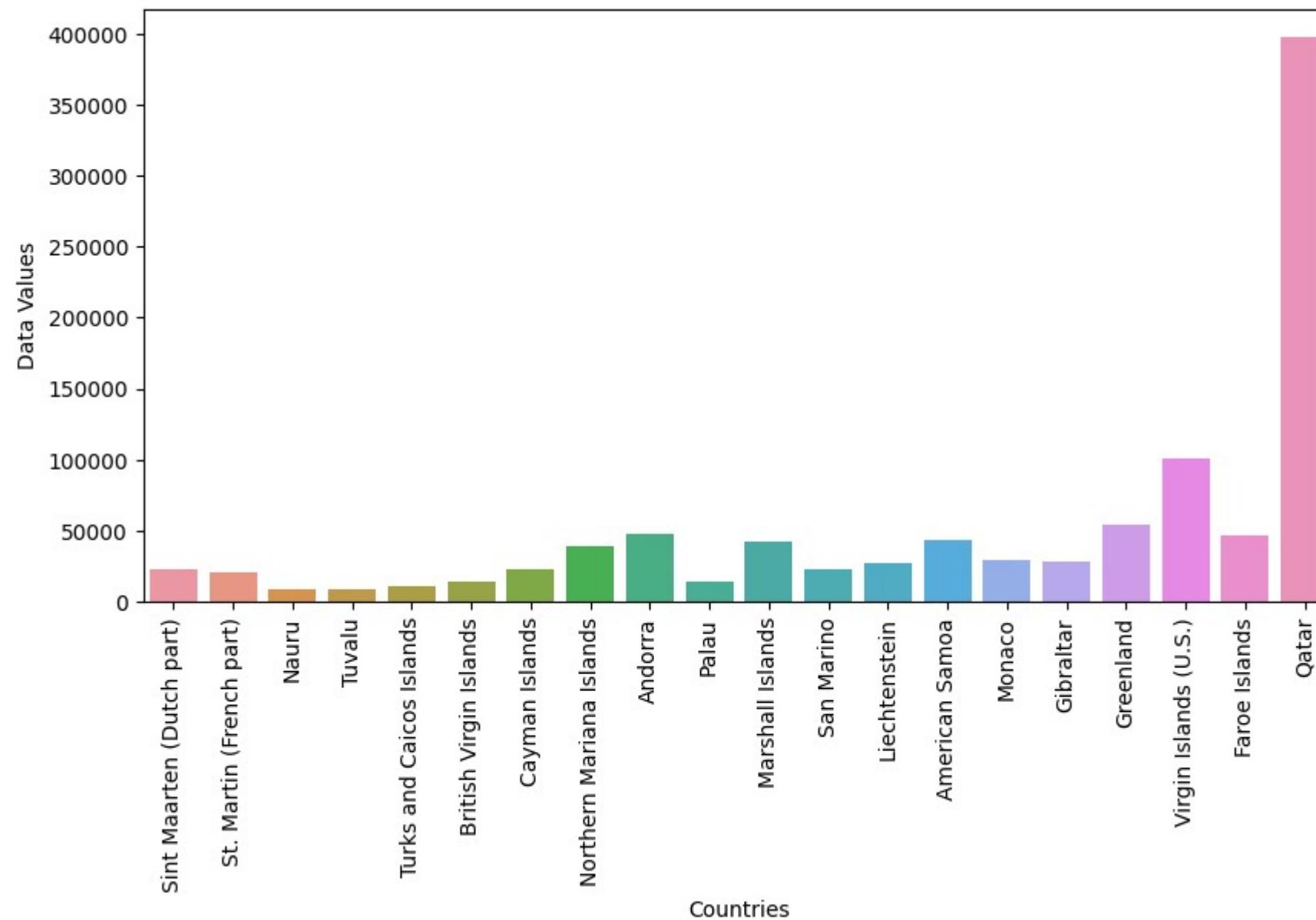


1985 - Data Values from 1960 to 2022

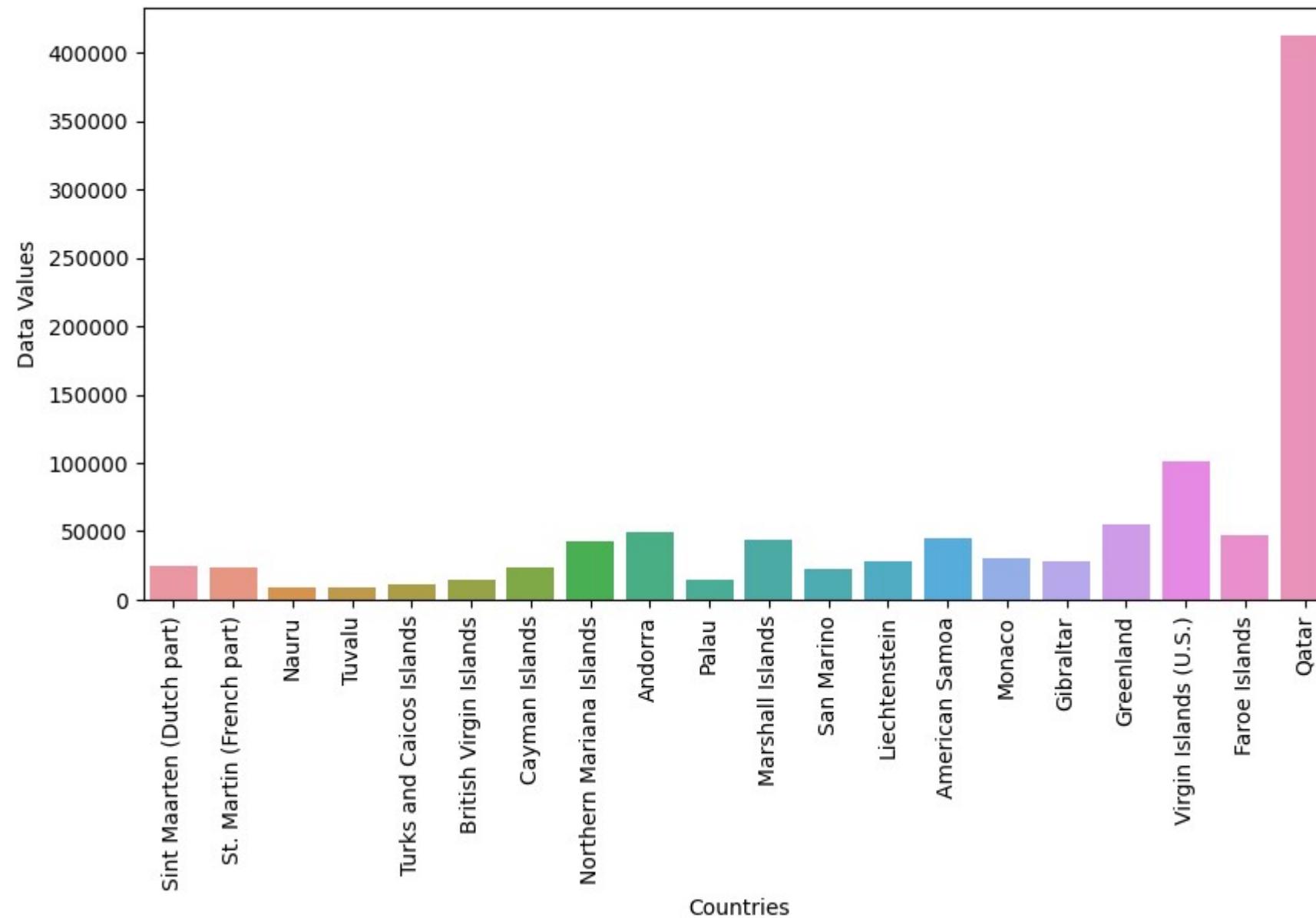




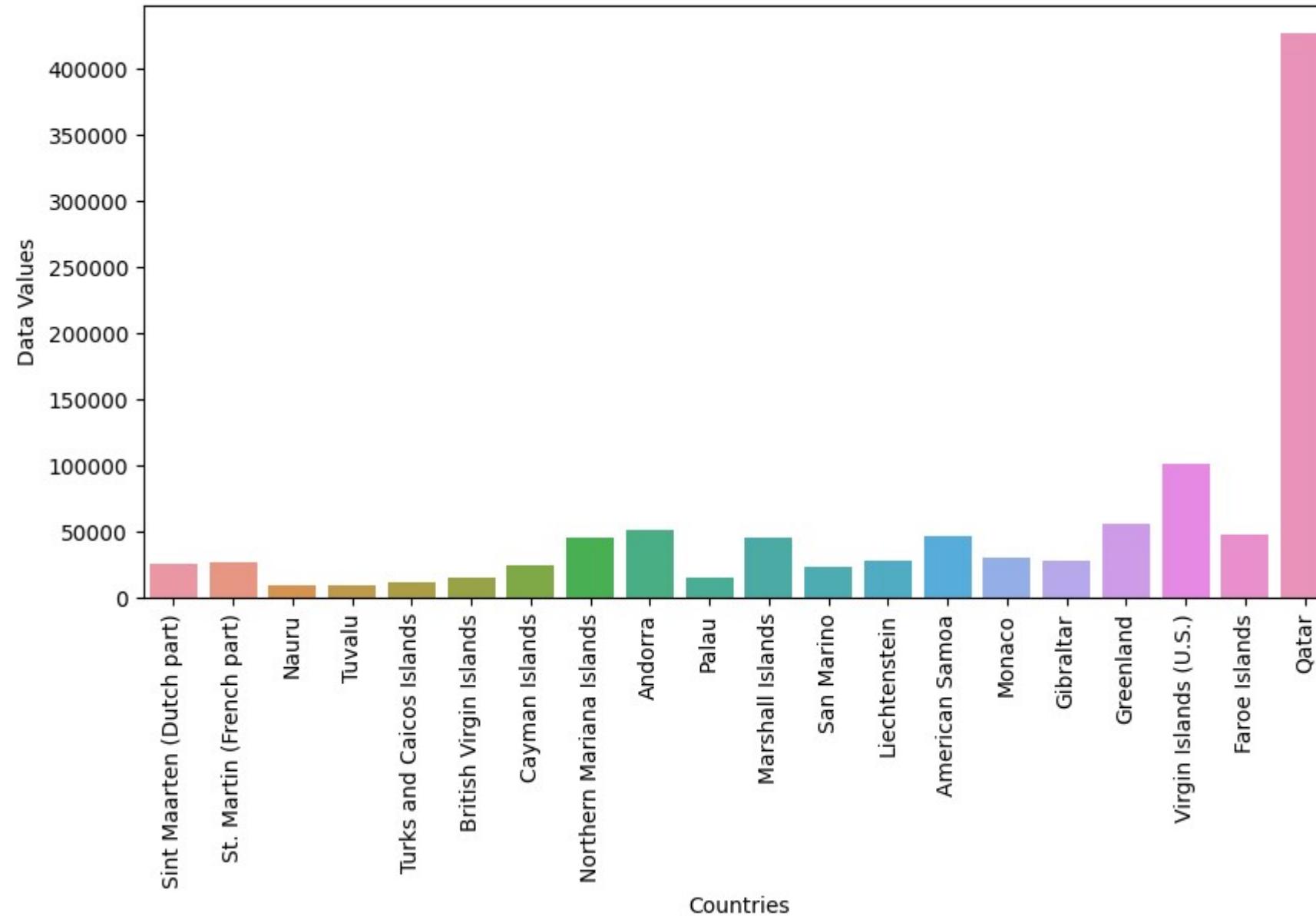
1987 - Data Values from 1960 to 2022



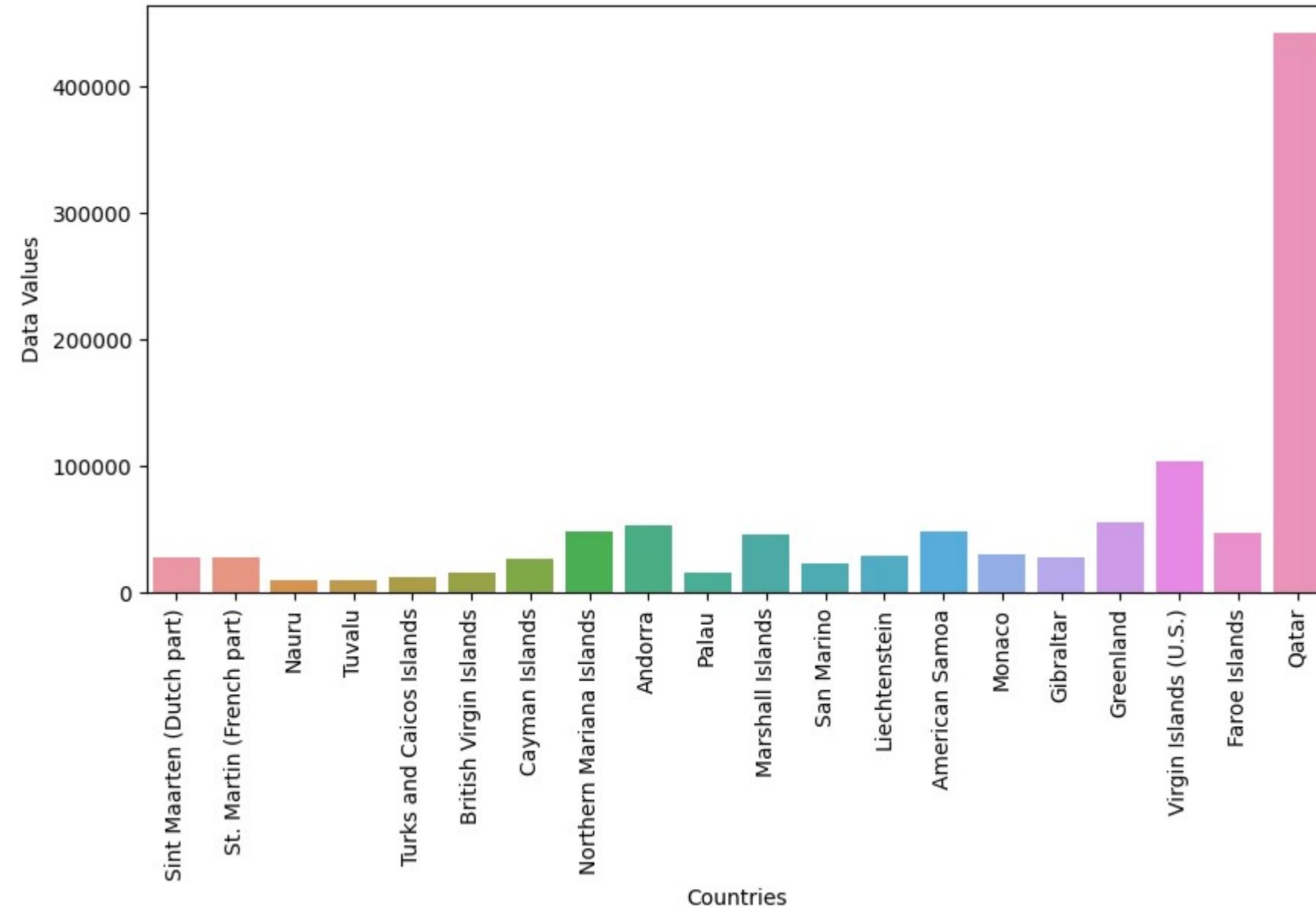
1988 - Data Values from 1960 to 2022



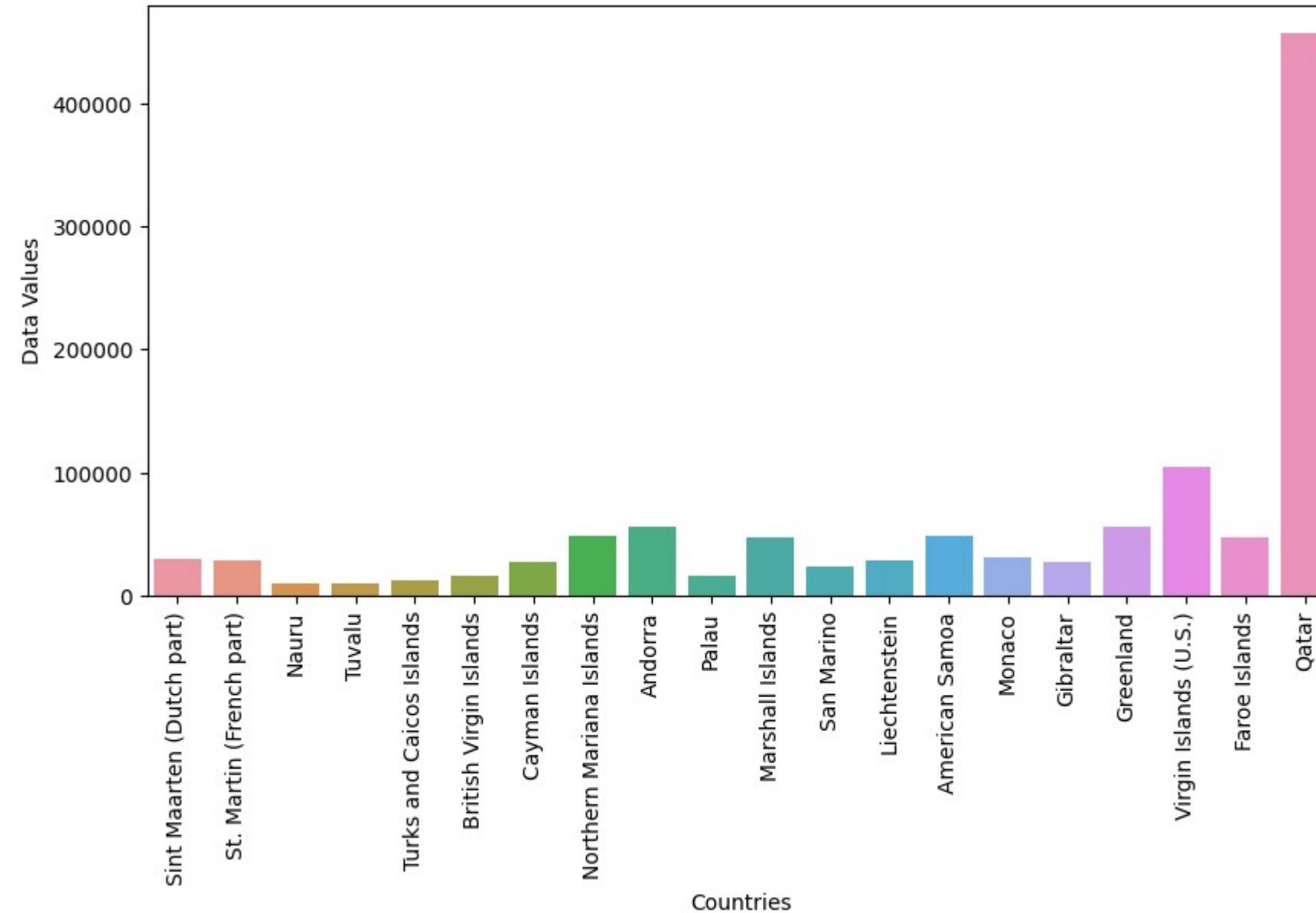
1989 - Data Values from 1960 to 2022



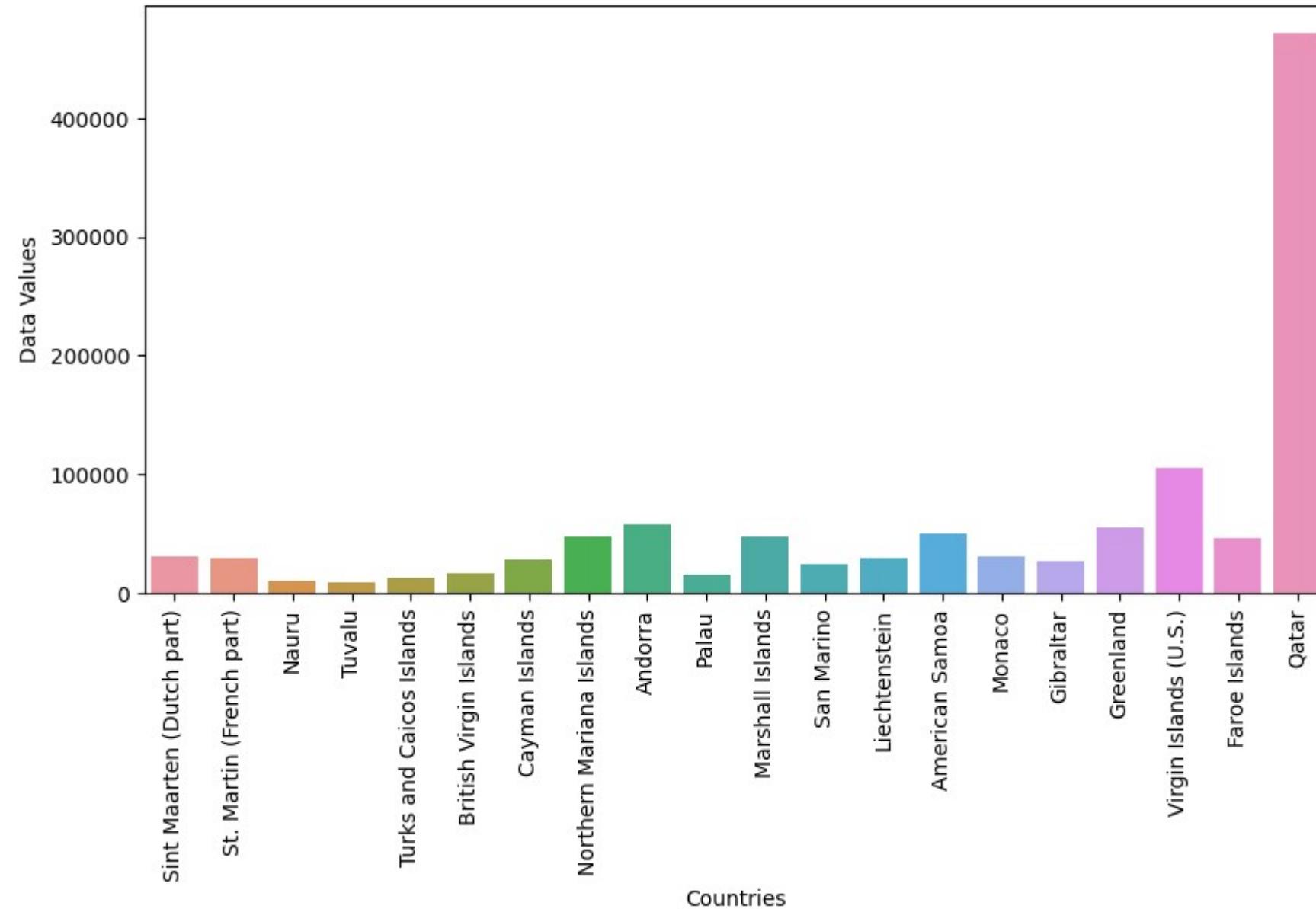
1990 - Data Values from 1960 to 2022



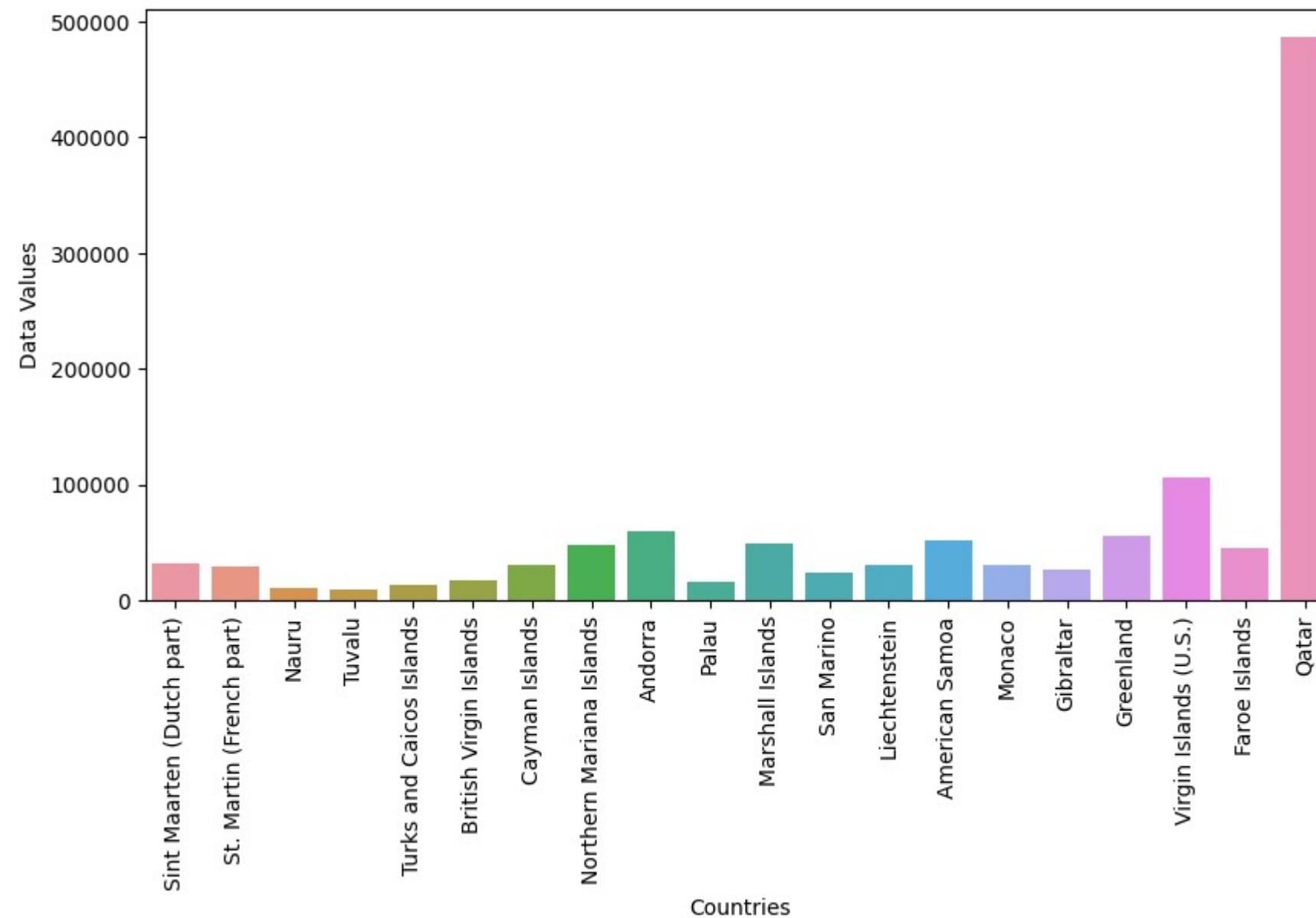
1991 - Data Values from 1960 to 2022



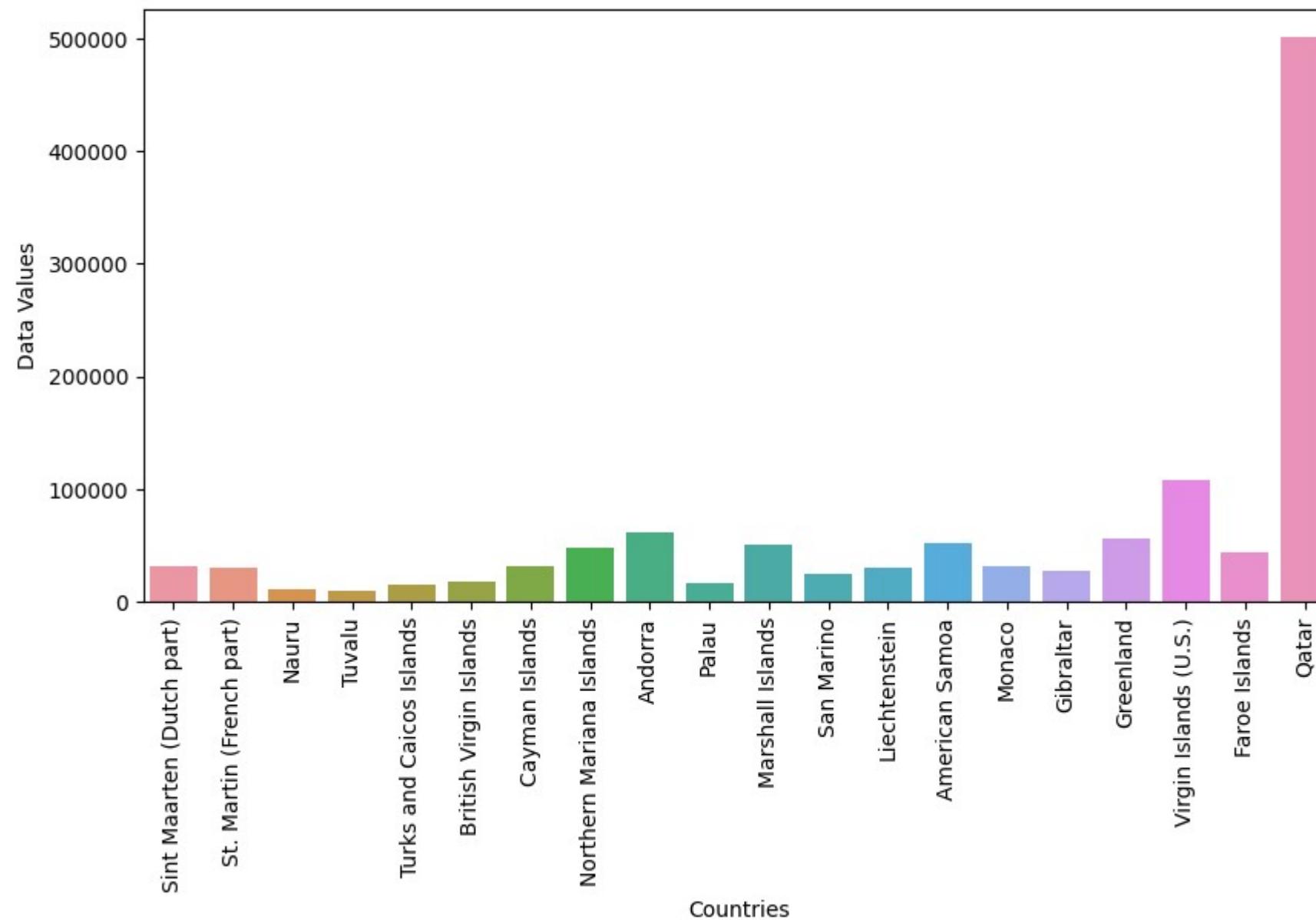
1992 - Data Values from 1960 to 2022



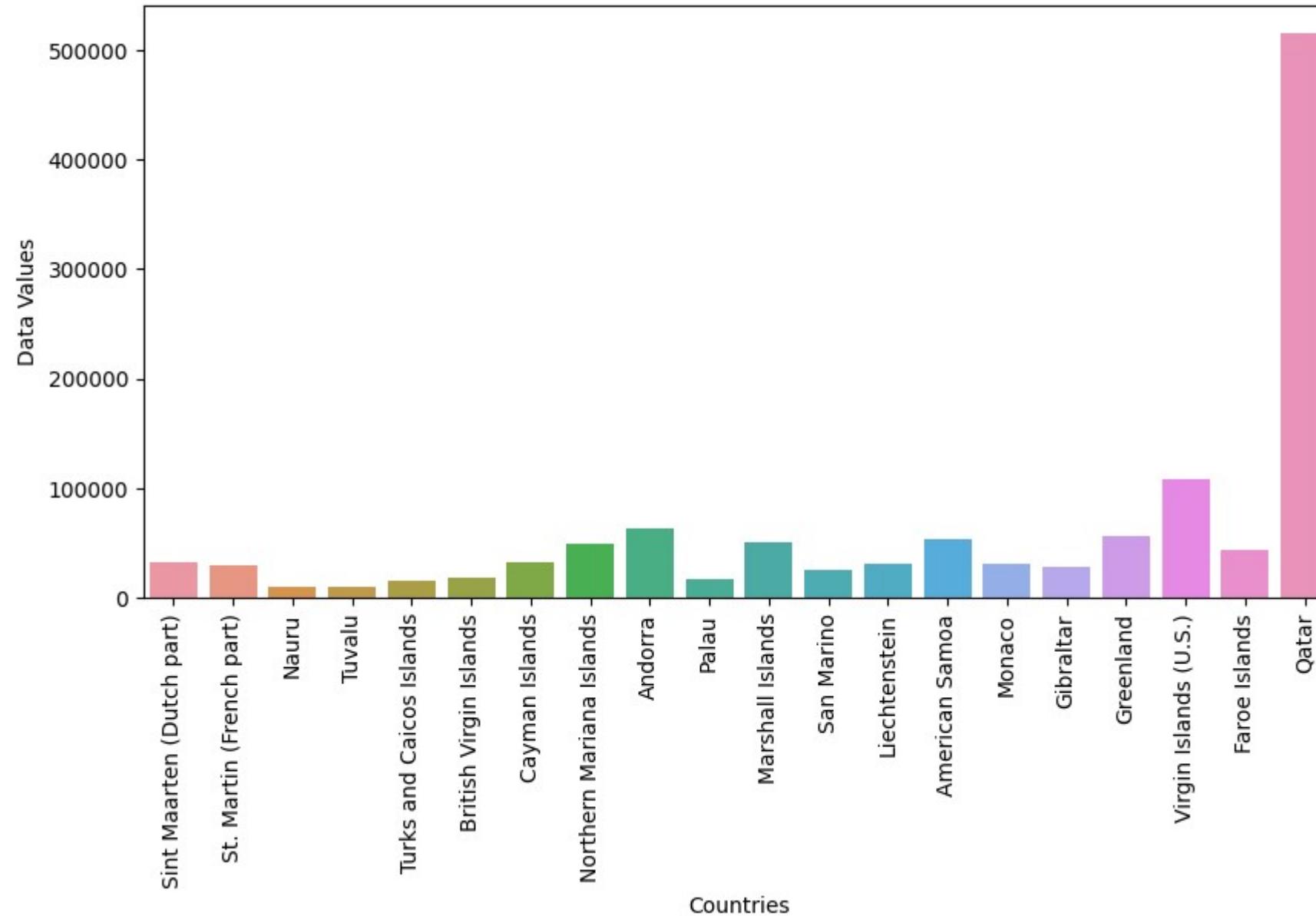
1993 - Data Values from 1960 to 2022



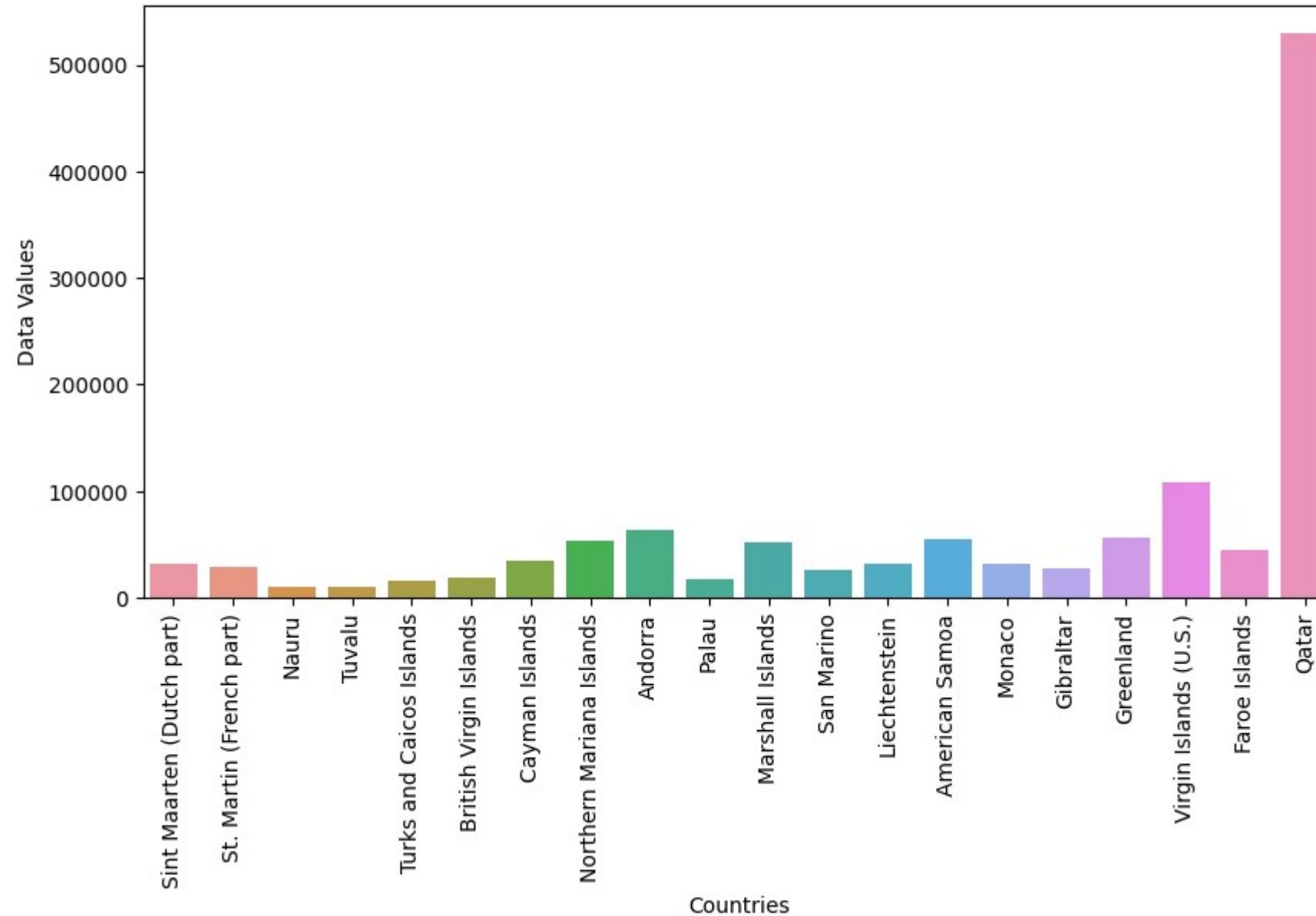
1994 - Data Values from 1960 to 2022



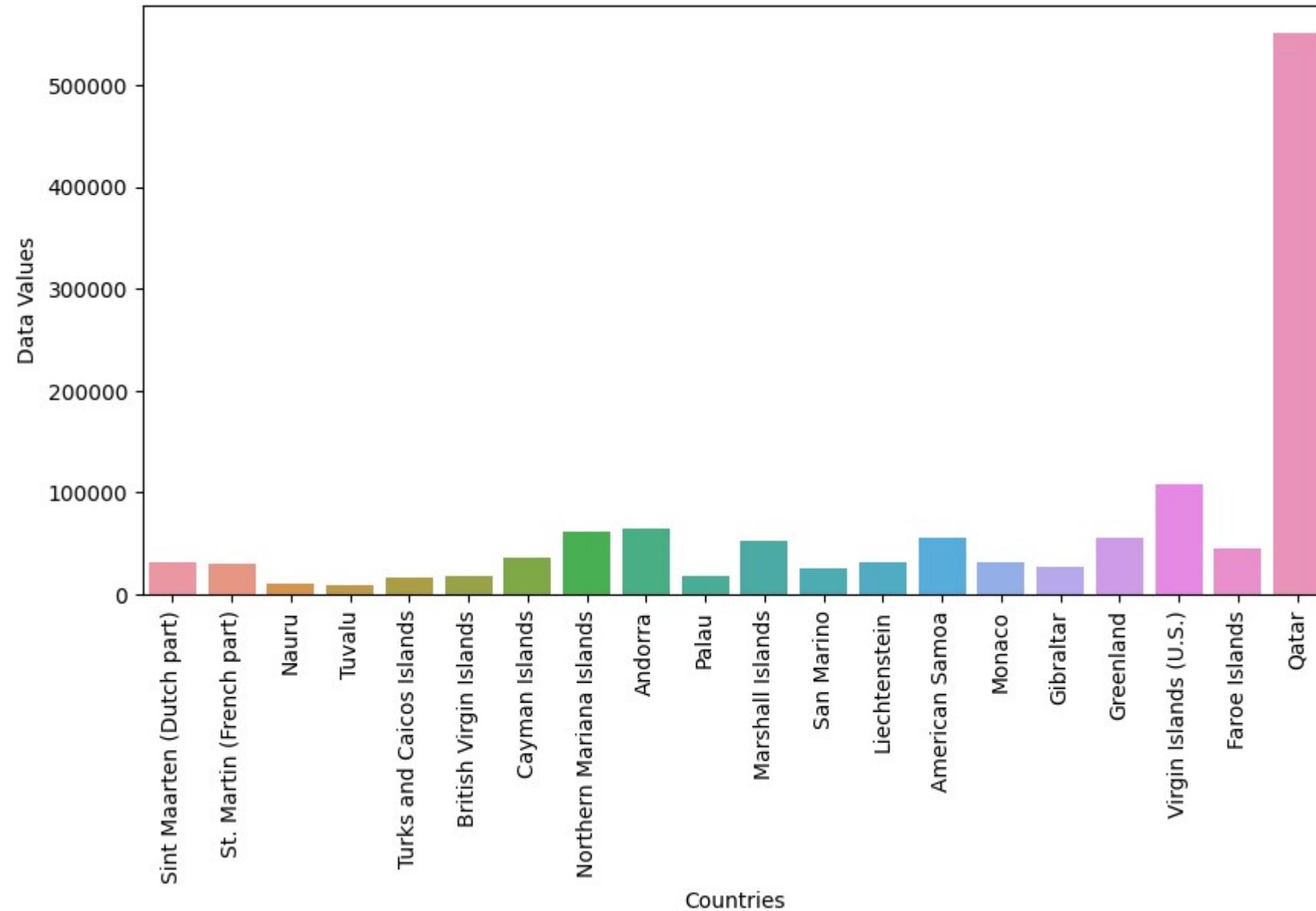
1995 - Data Values from 1960 to 2022



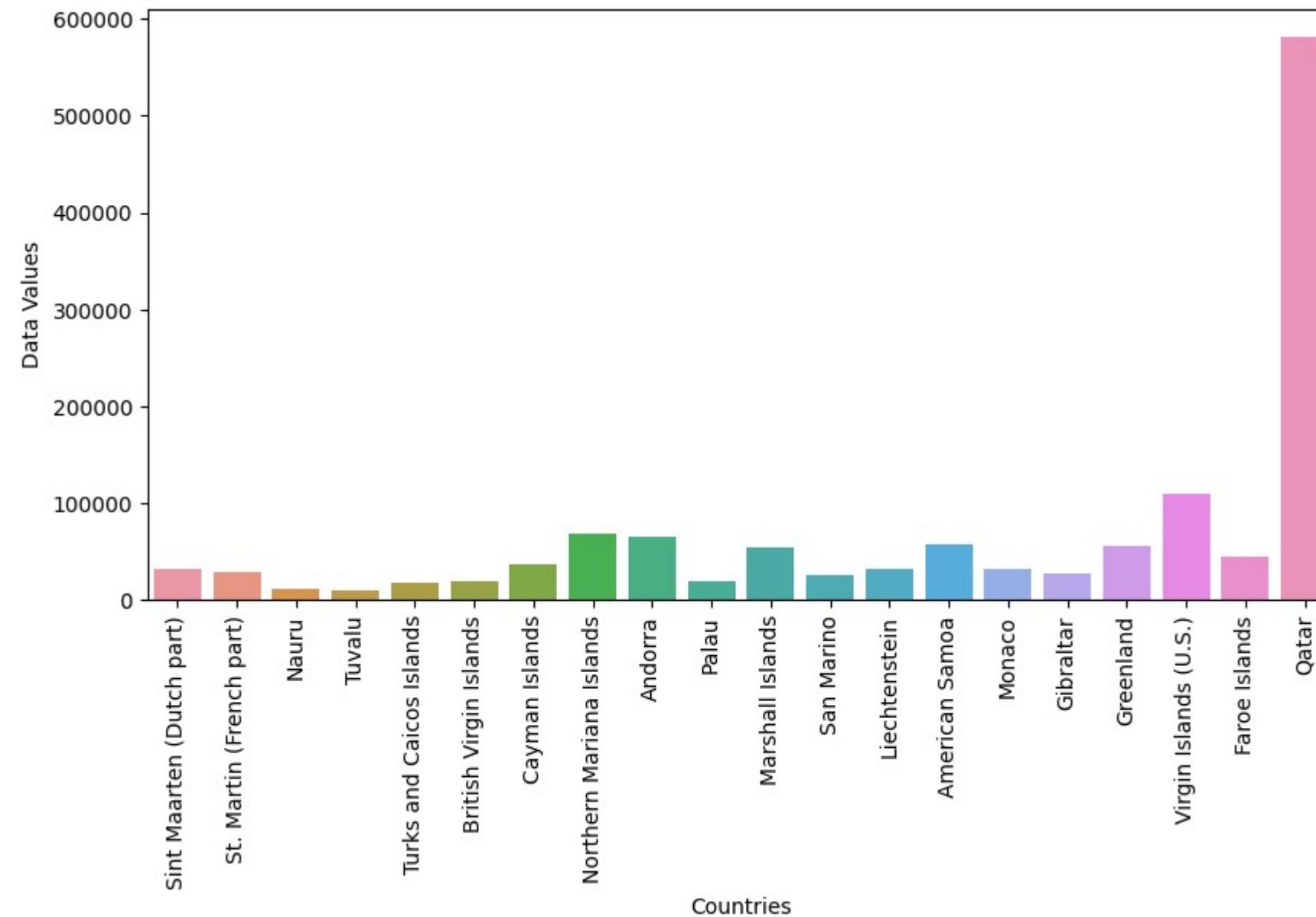
1996 - Data Values from 1960 to 2022



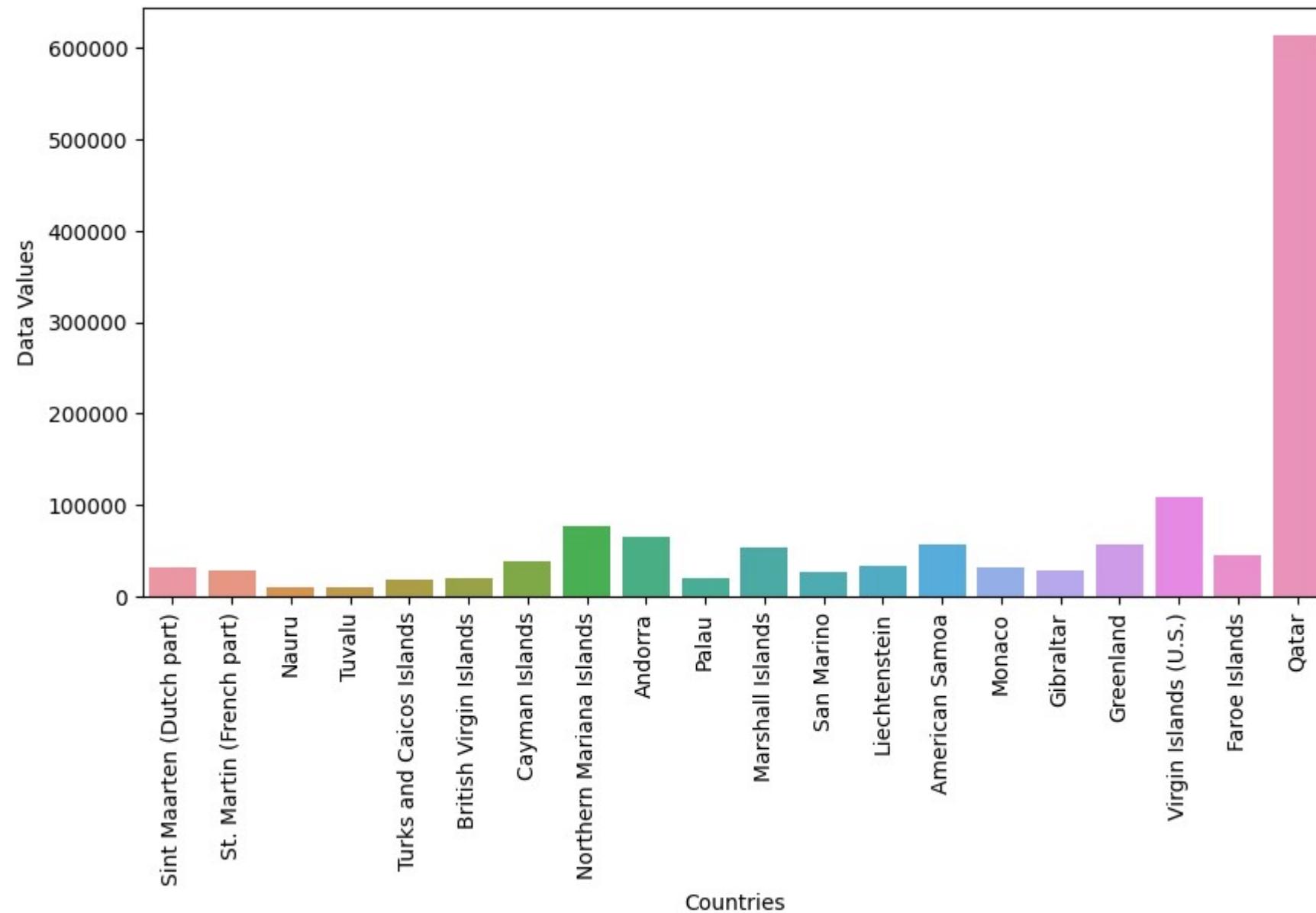
1997 - Data Values from 1960 to 2022



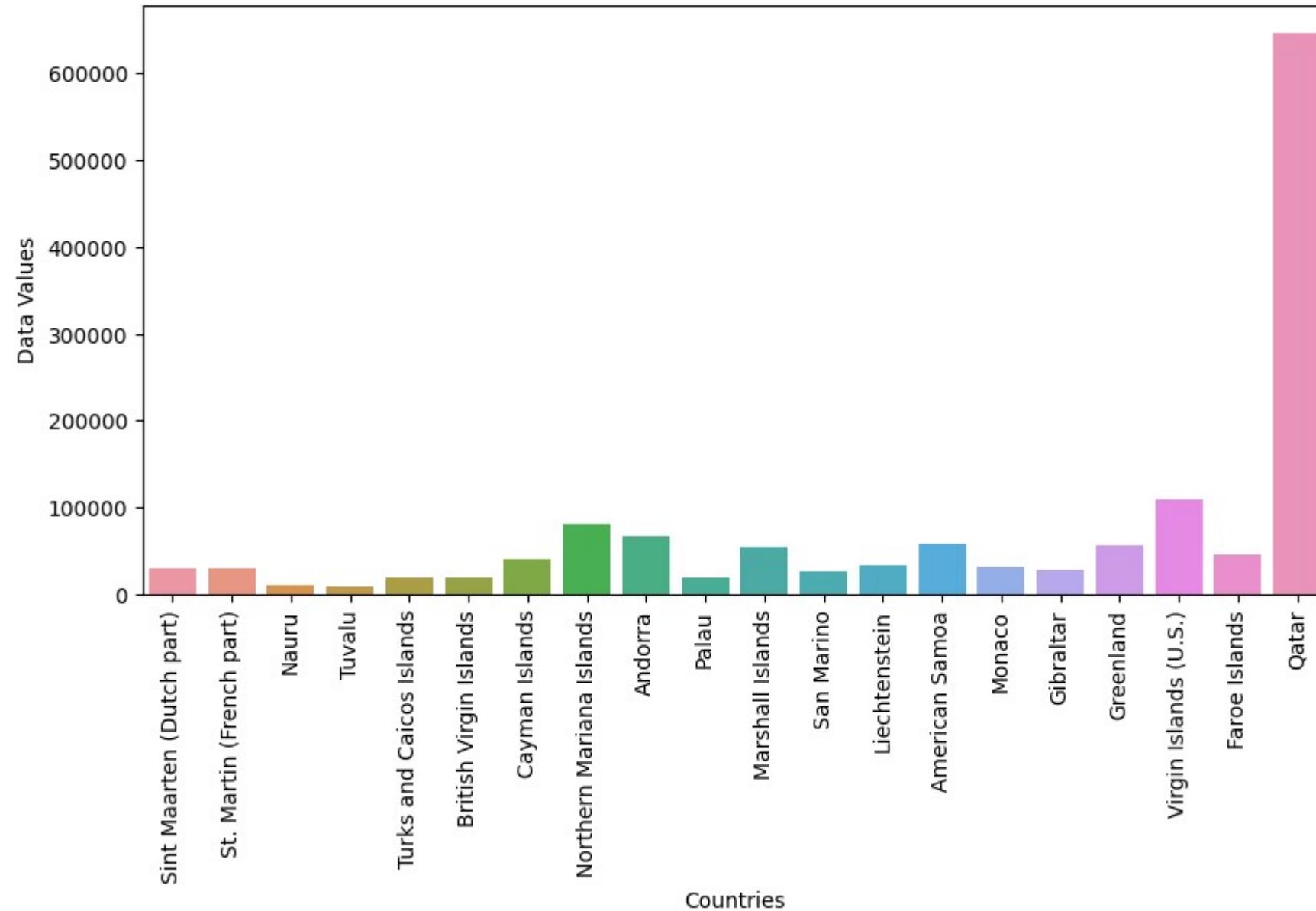
1998 - Data Values from 1960 to 2022



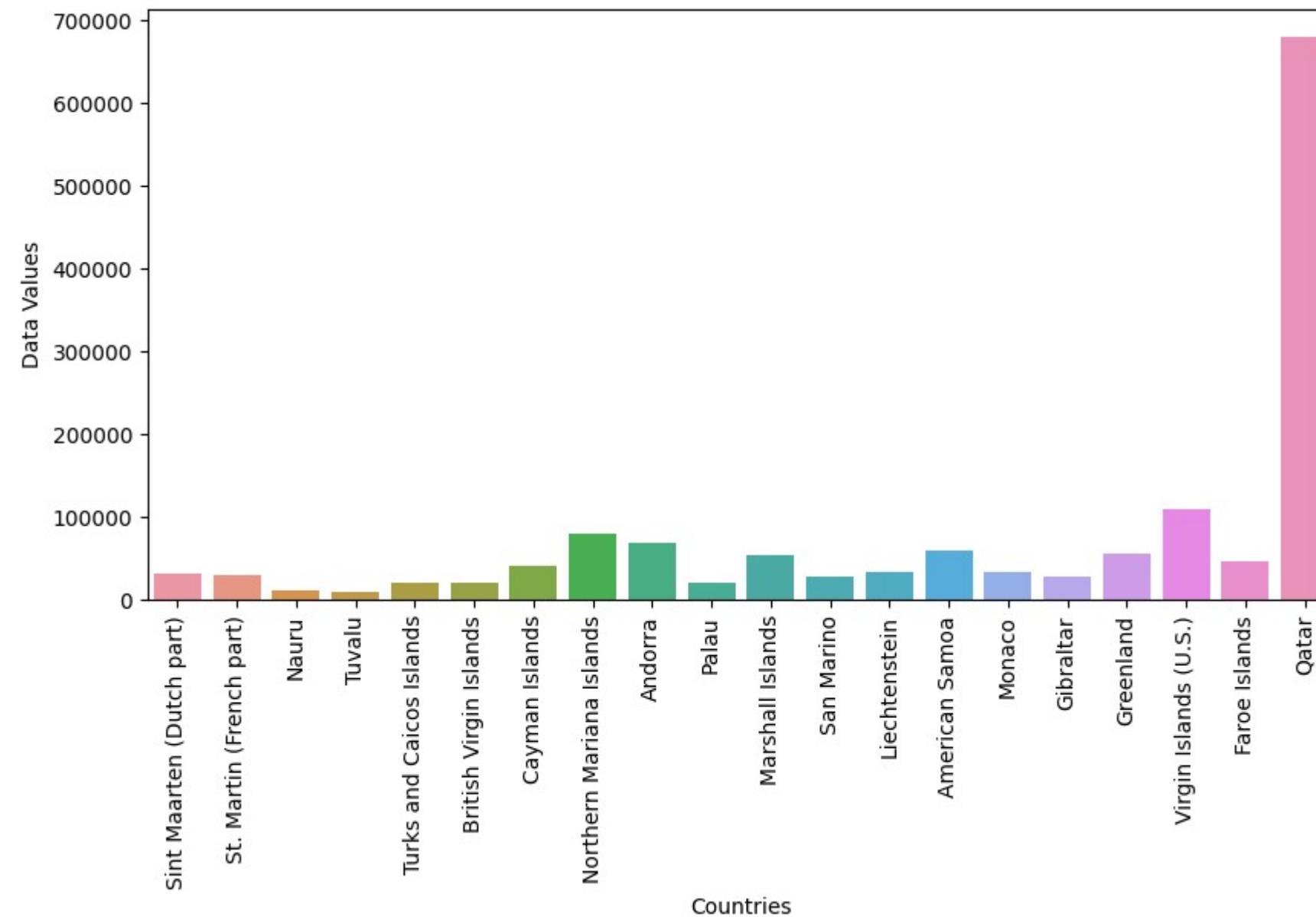
1999 - Data Values from 1960 to 2022



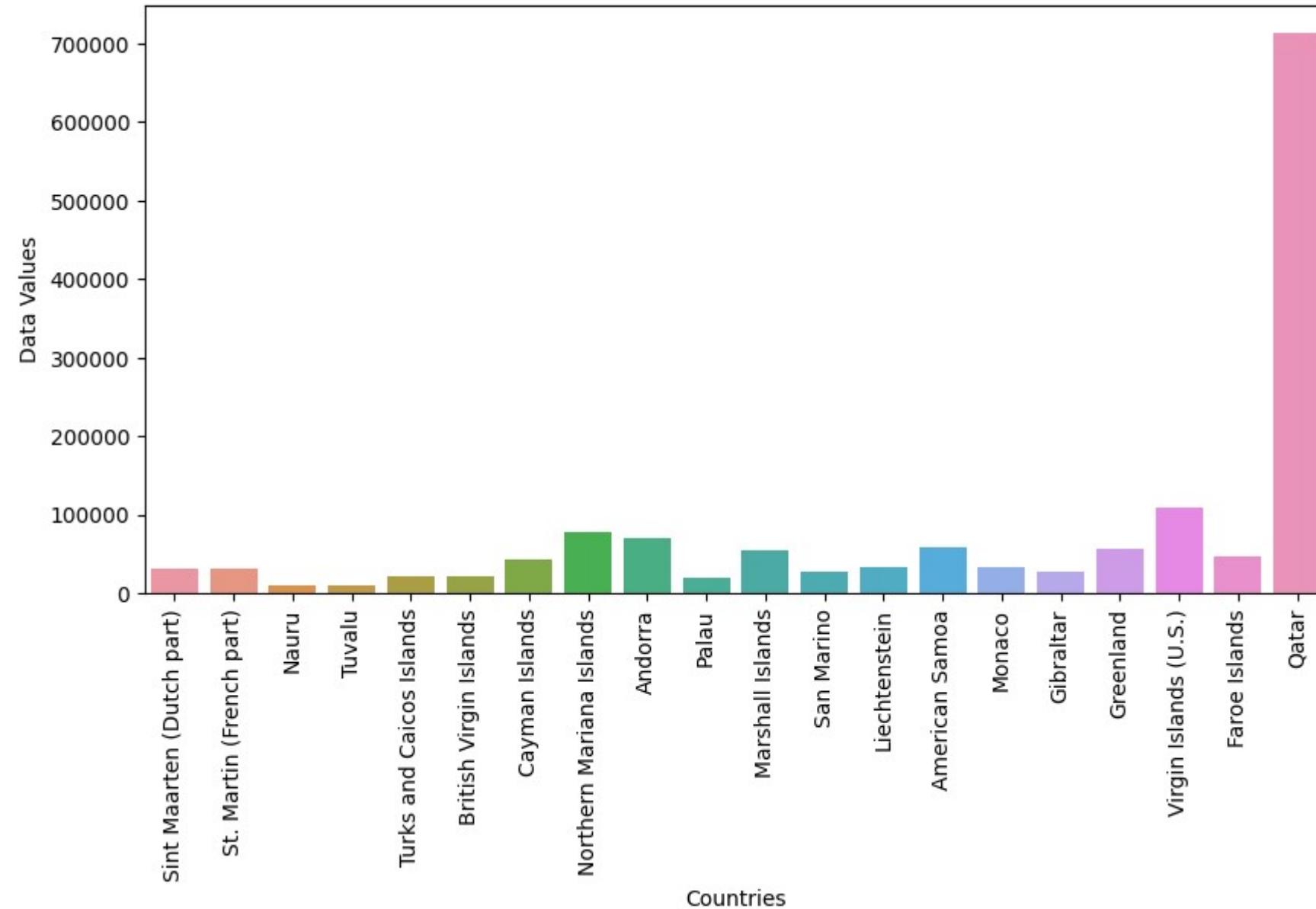
2000 - Data Values from 1960 to 2022



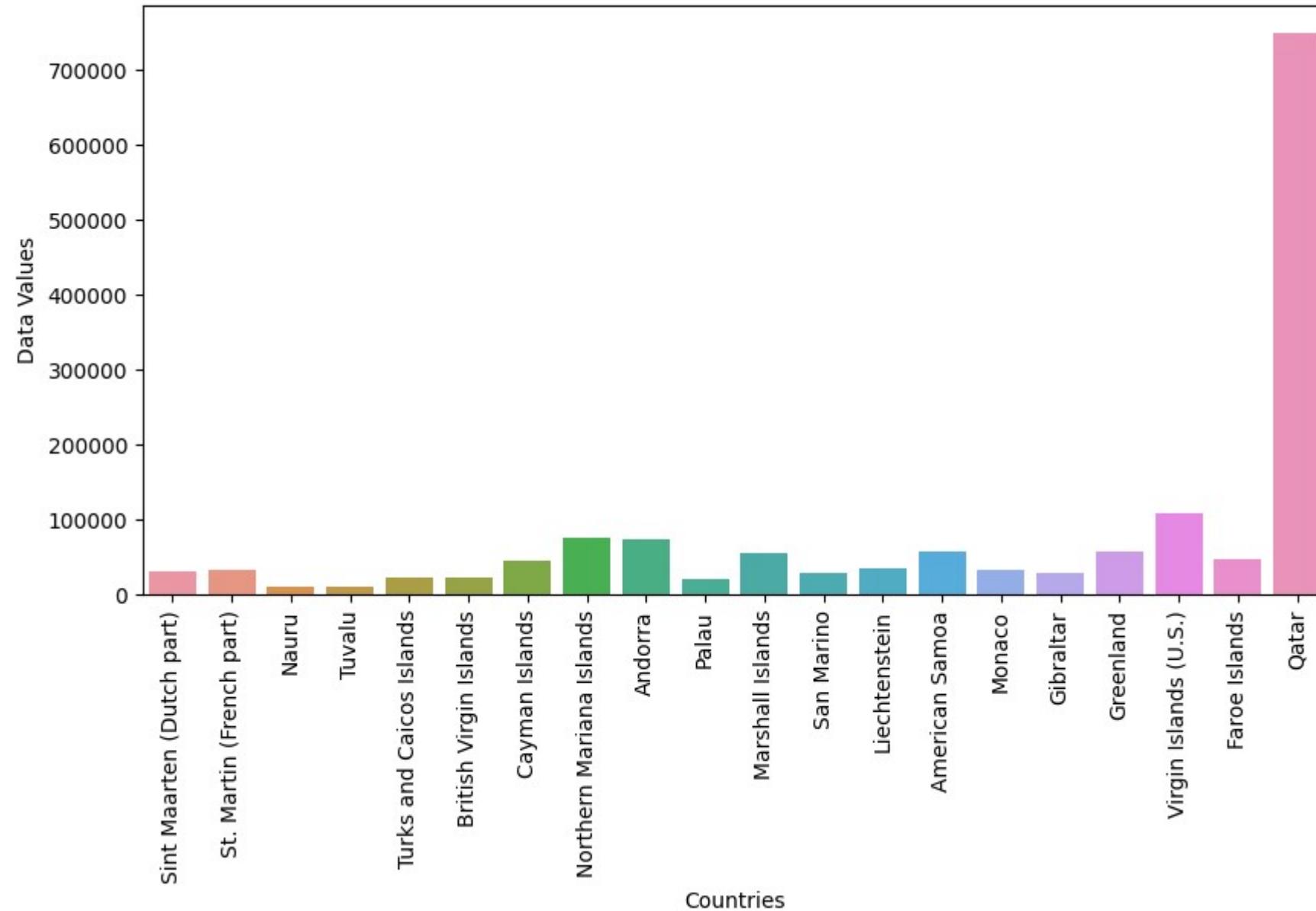
2001 - Data Values from 1960 to 2022



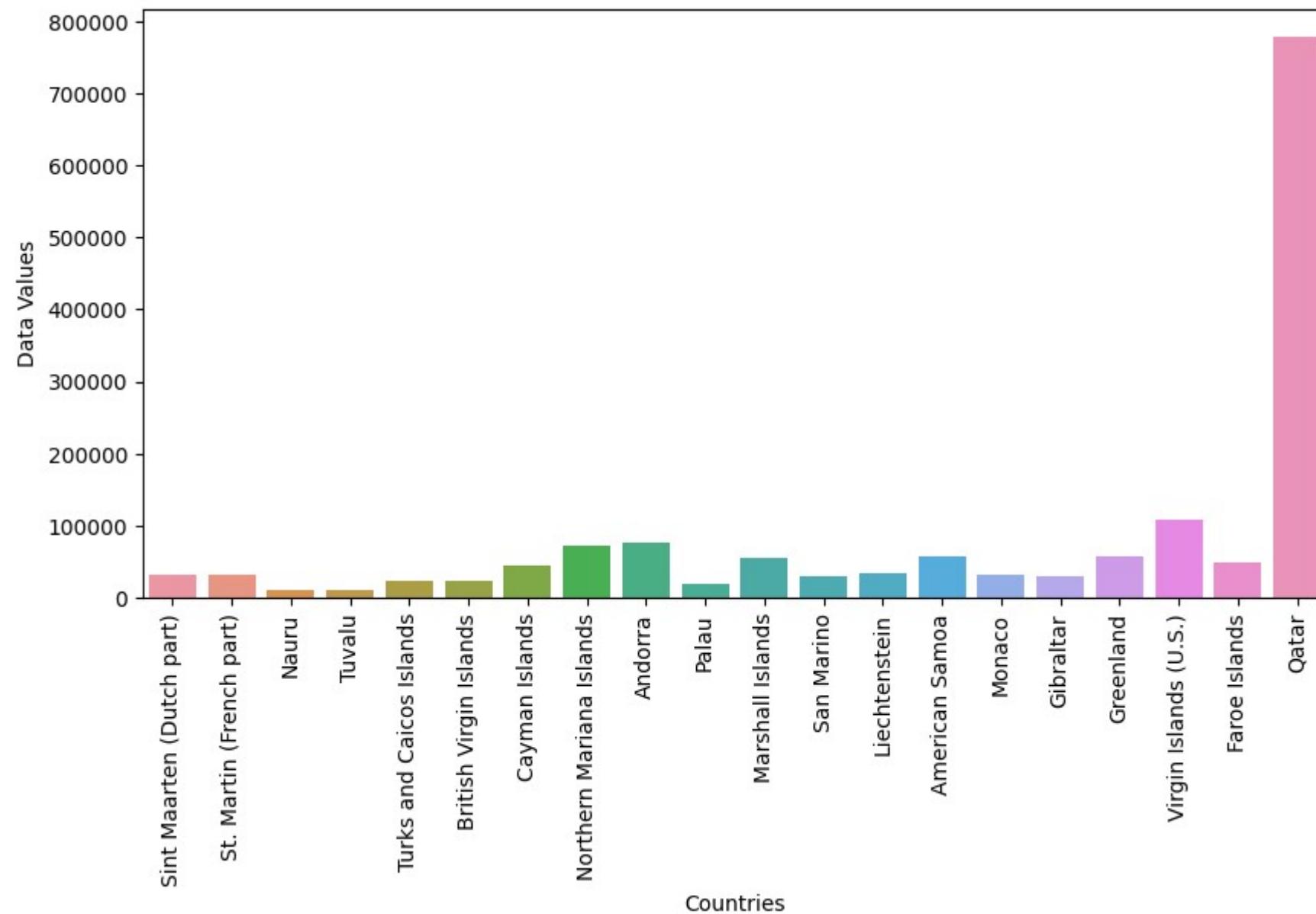
2002 - Data Values from 1960 to 2022



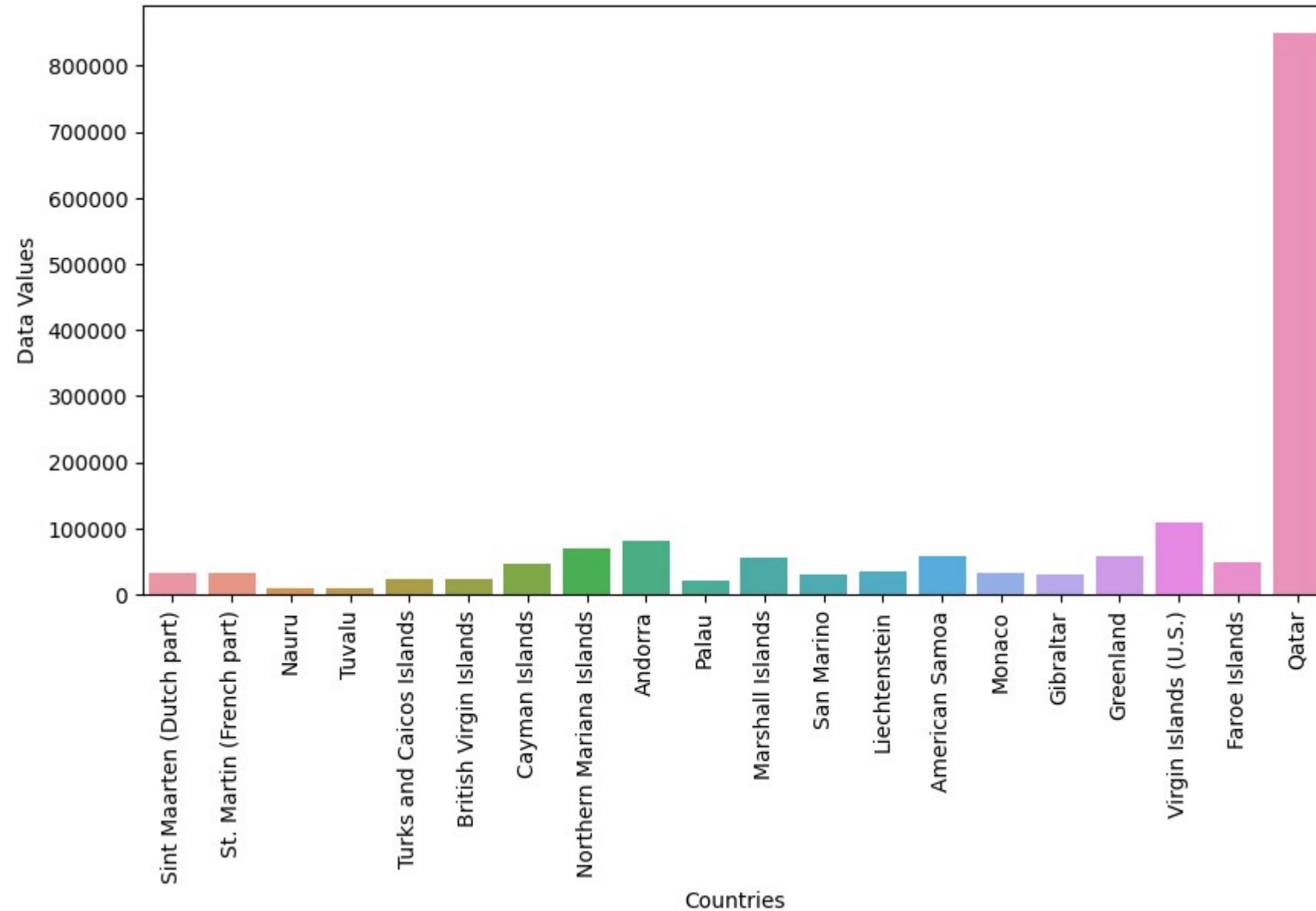
2003 - Data Values from 1960 to 2022

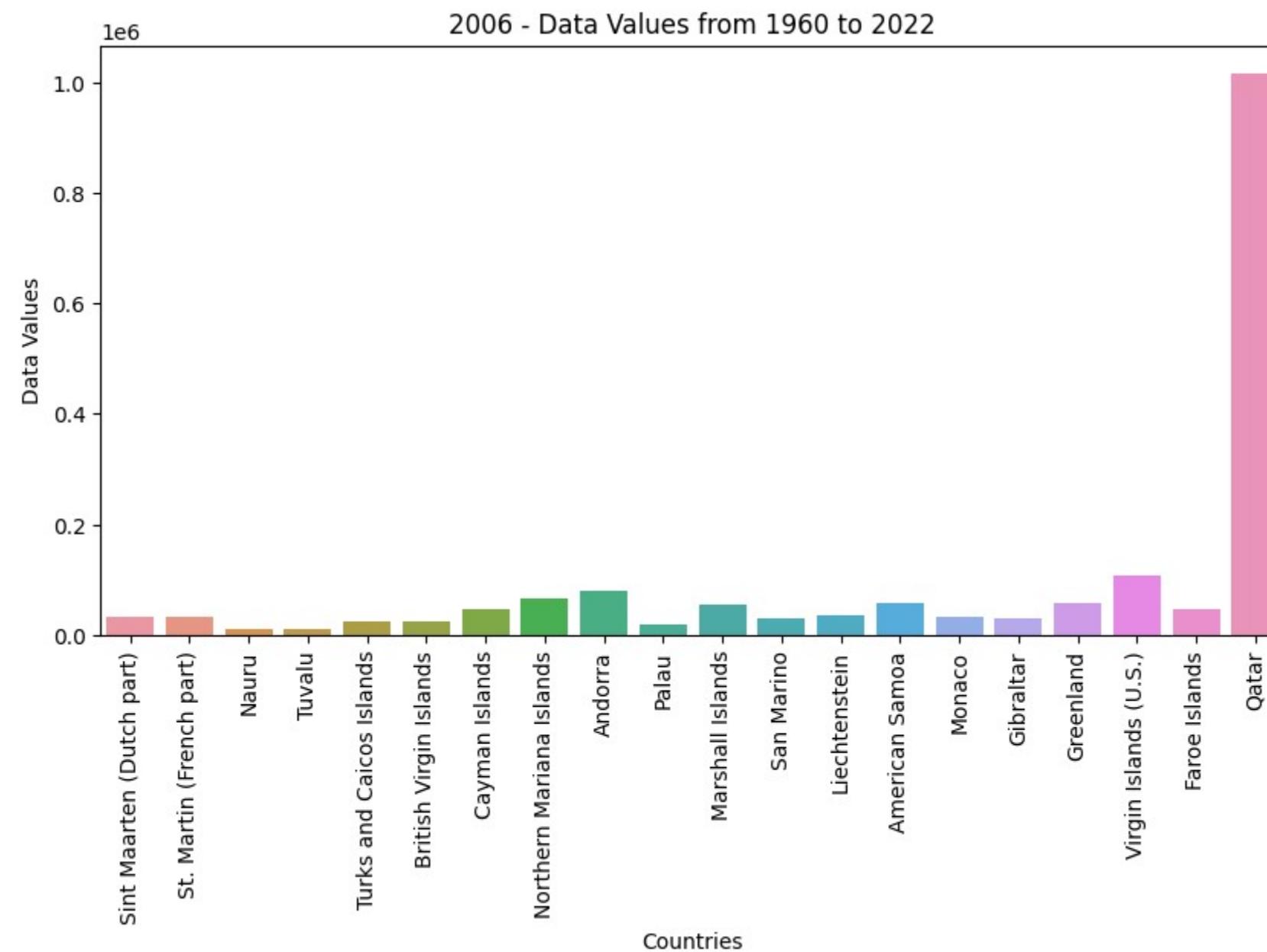


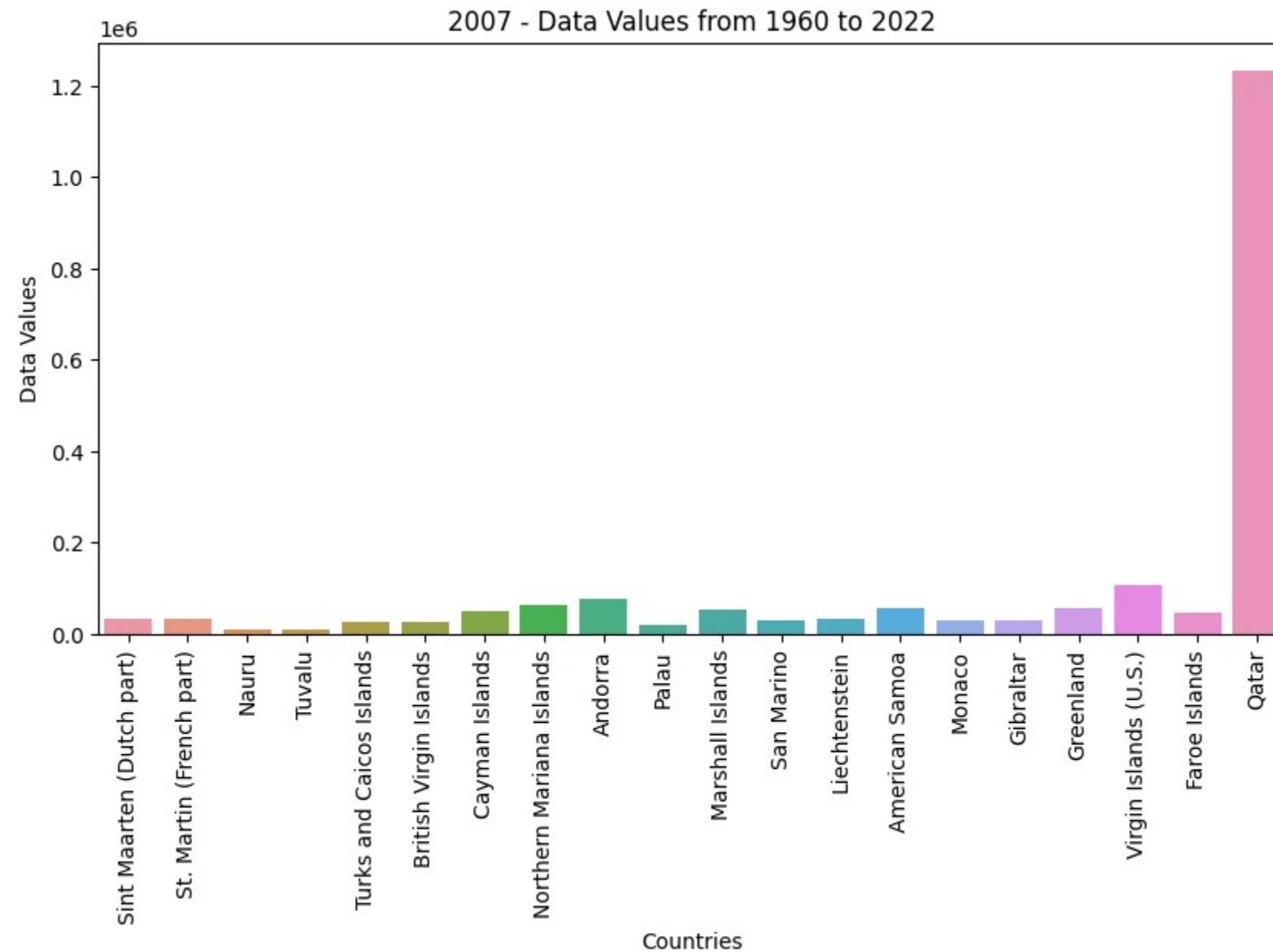
2004 - Data Values from 1960 to 2022

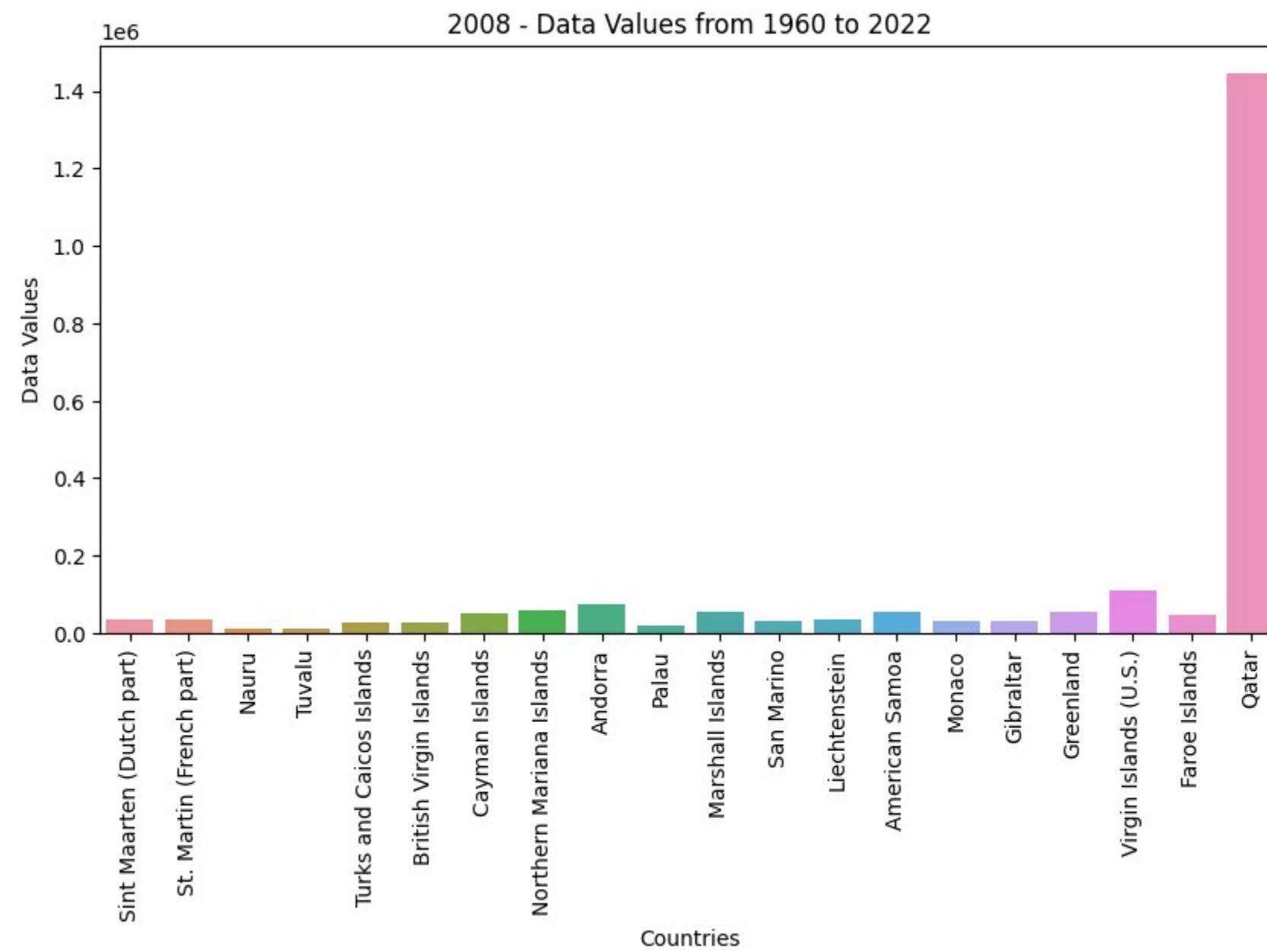


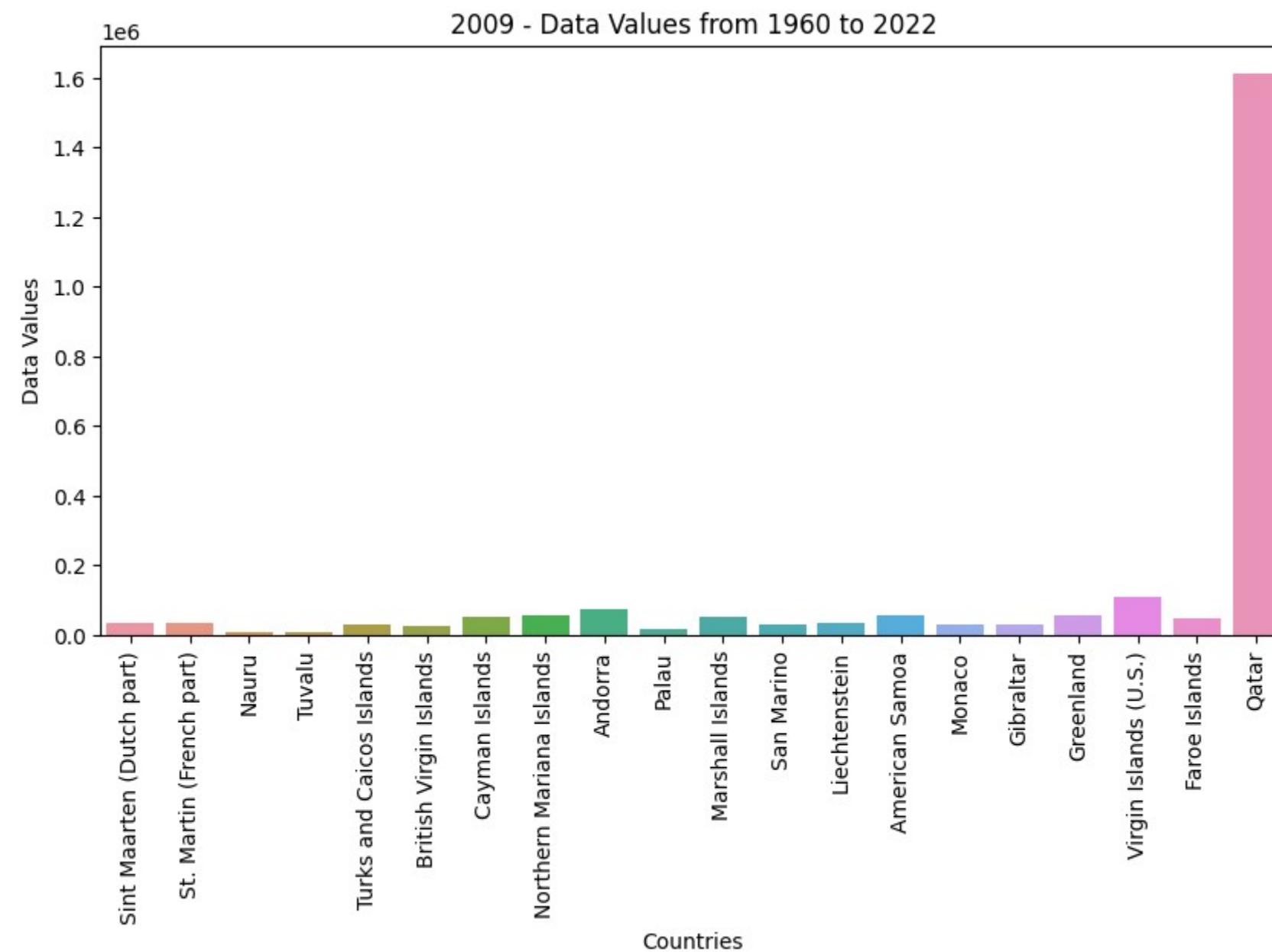
2005 - Data Values from 1960 to 2022

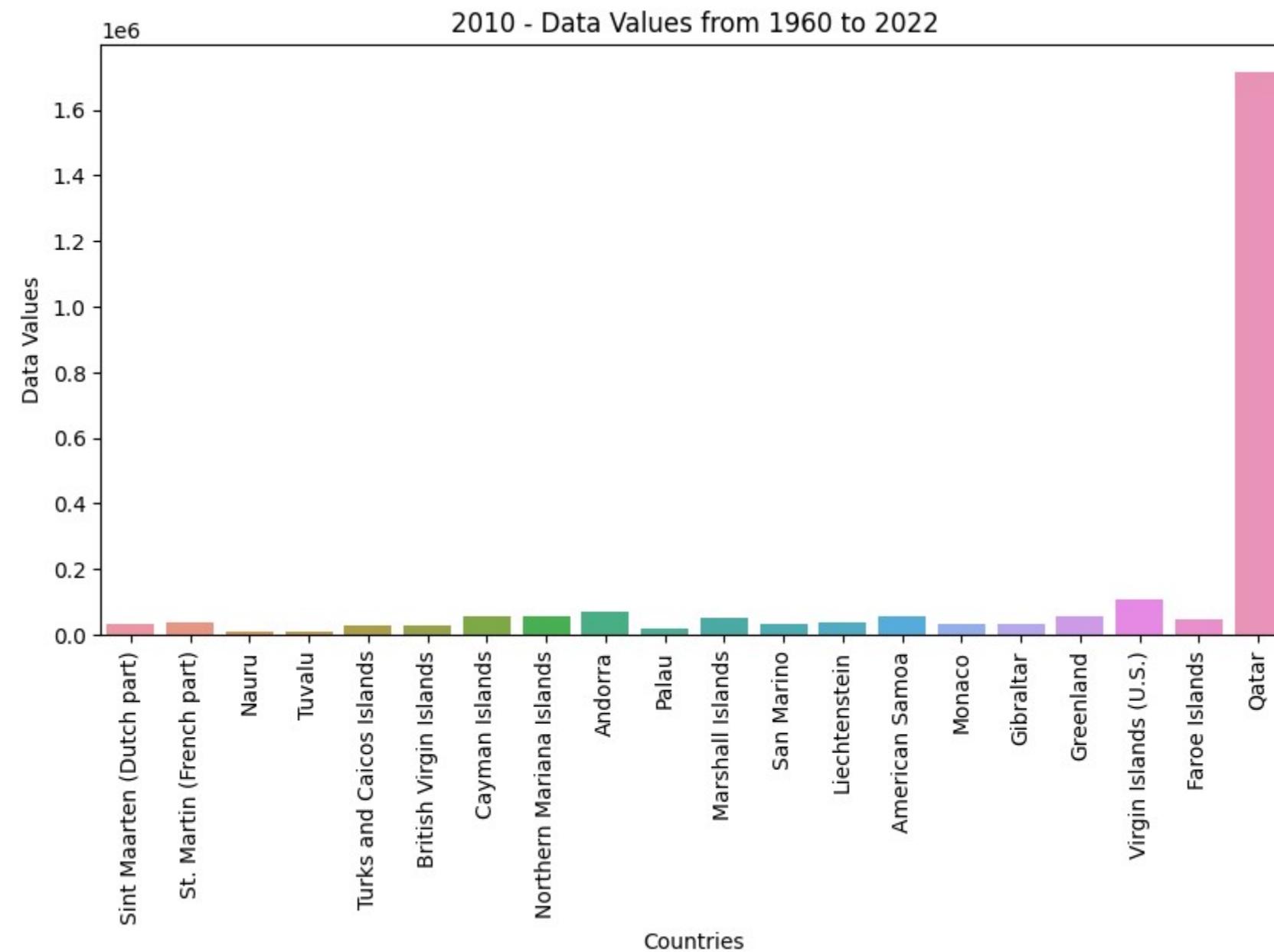


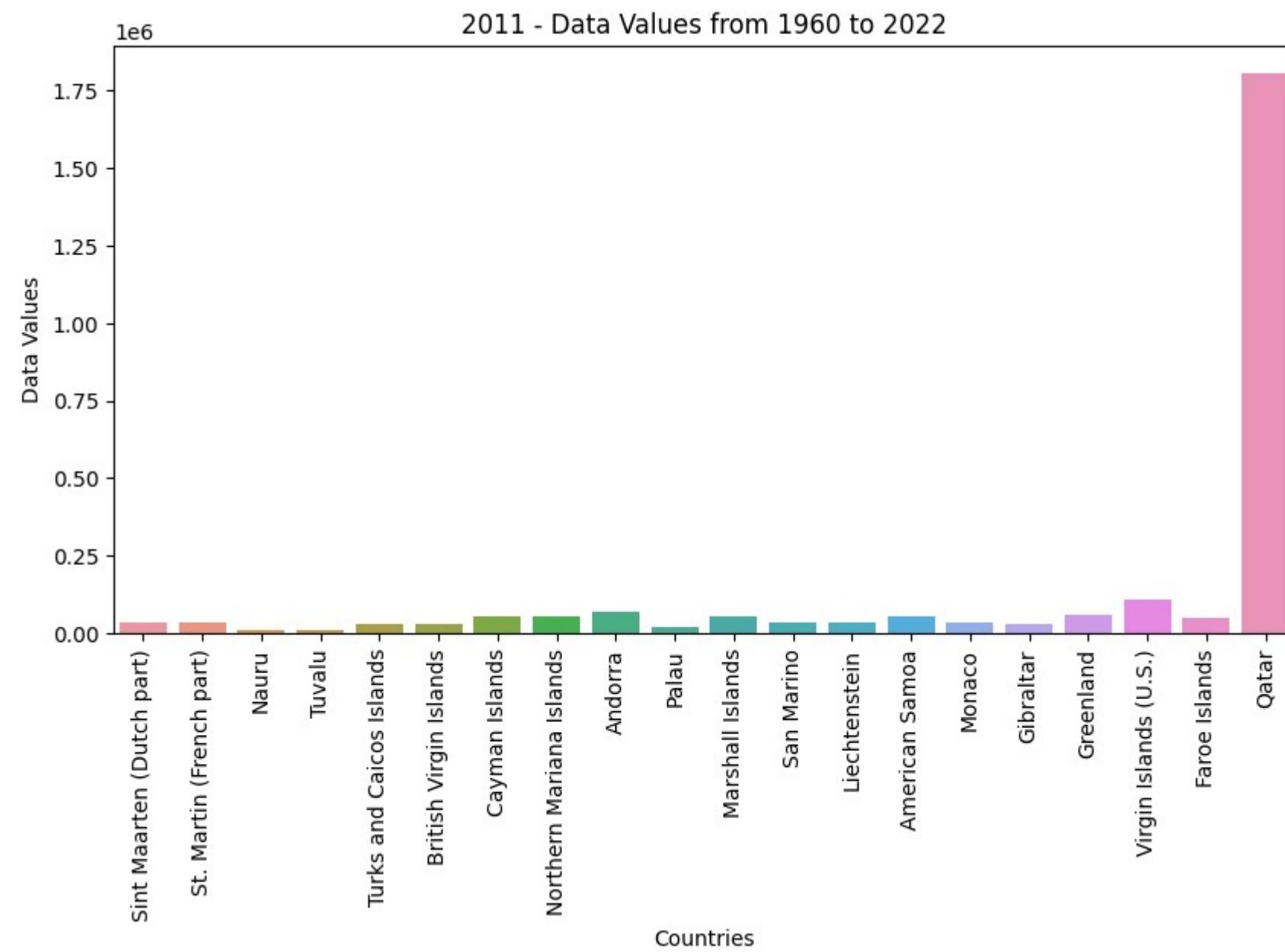


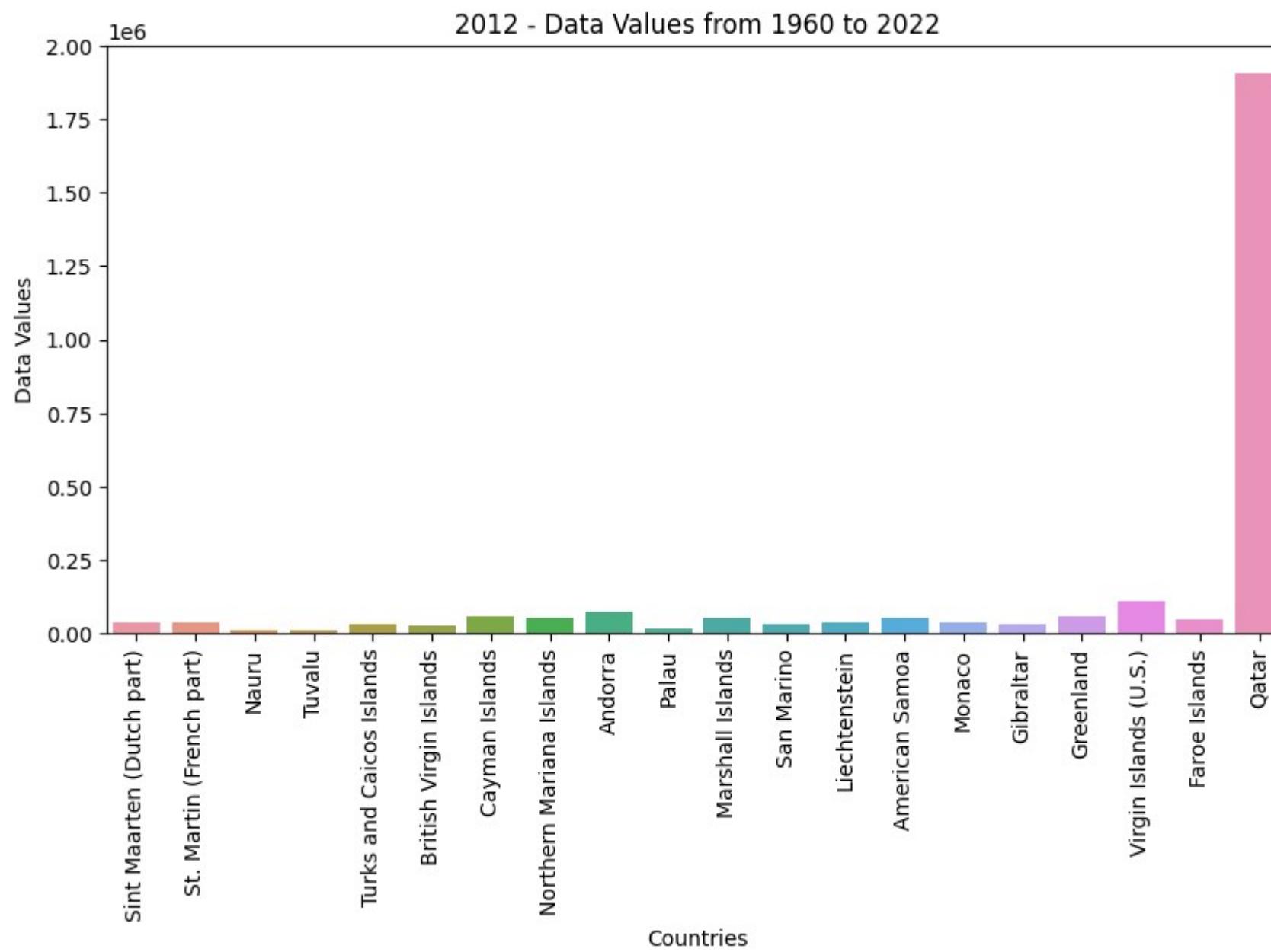


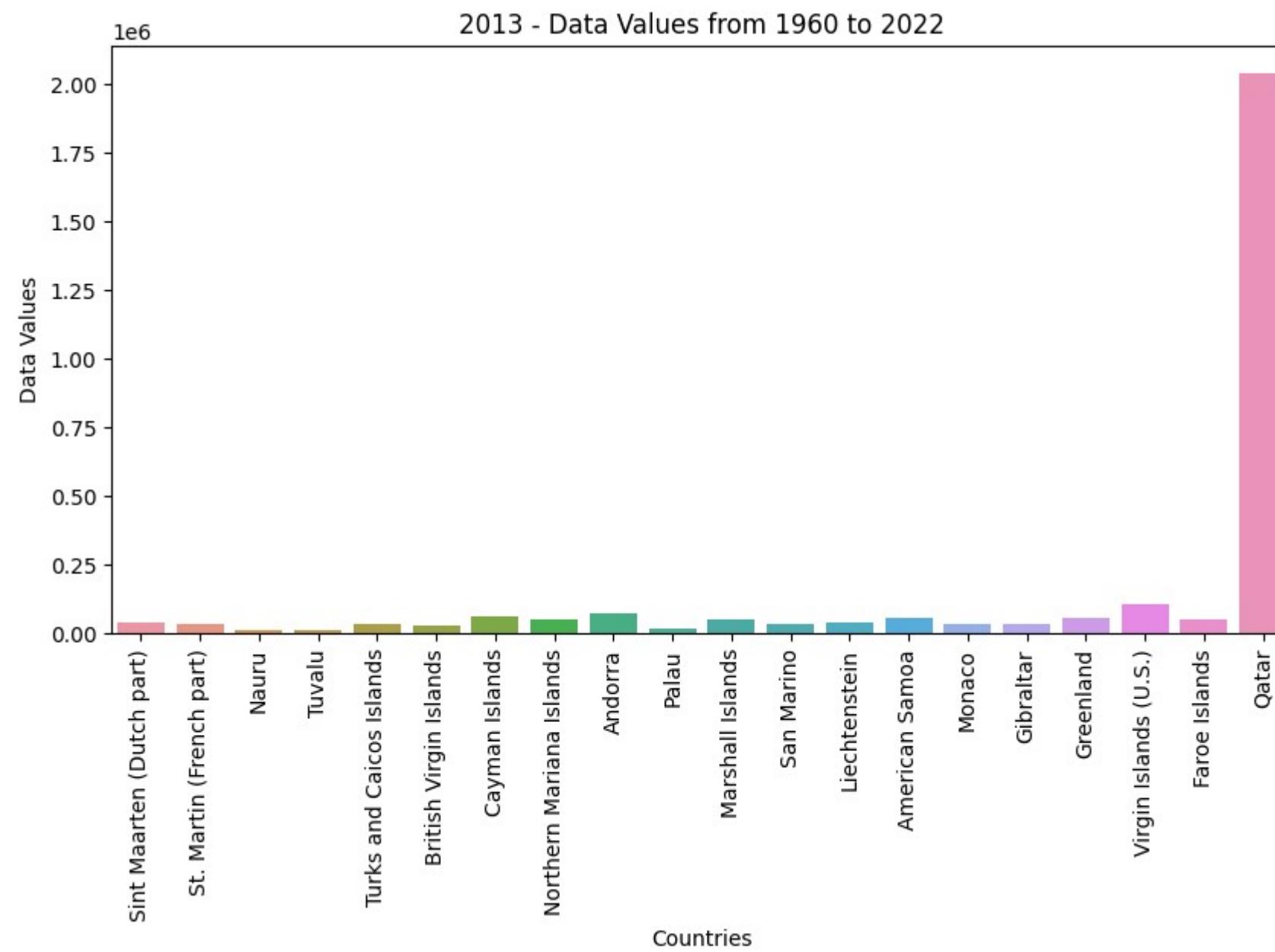


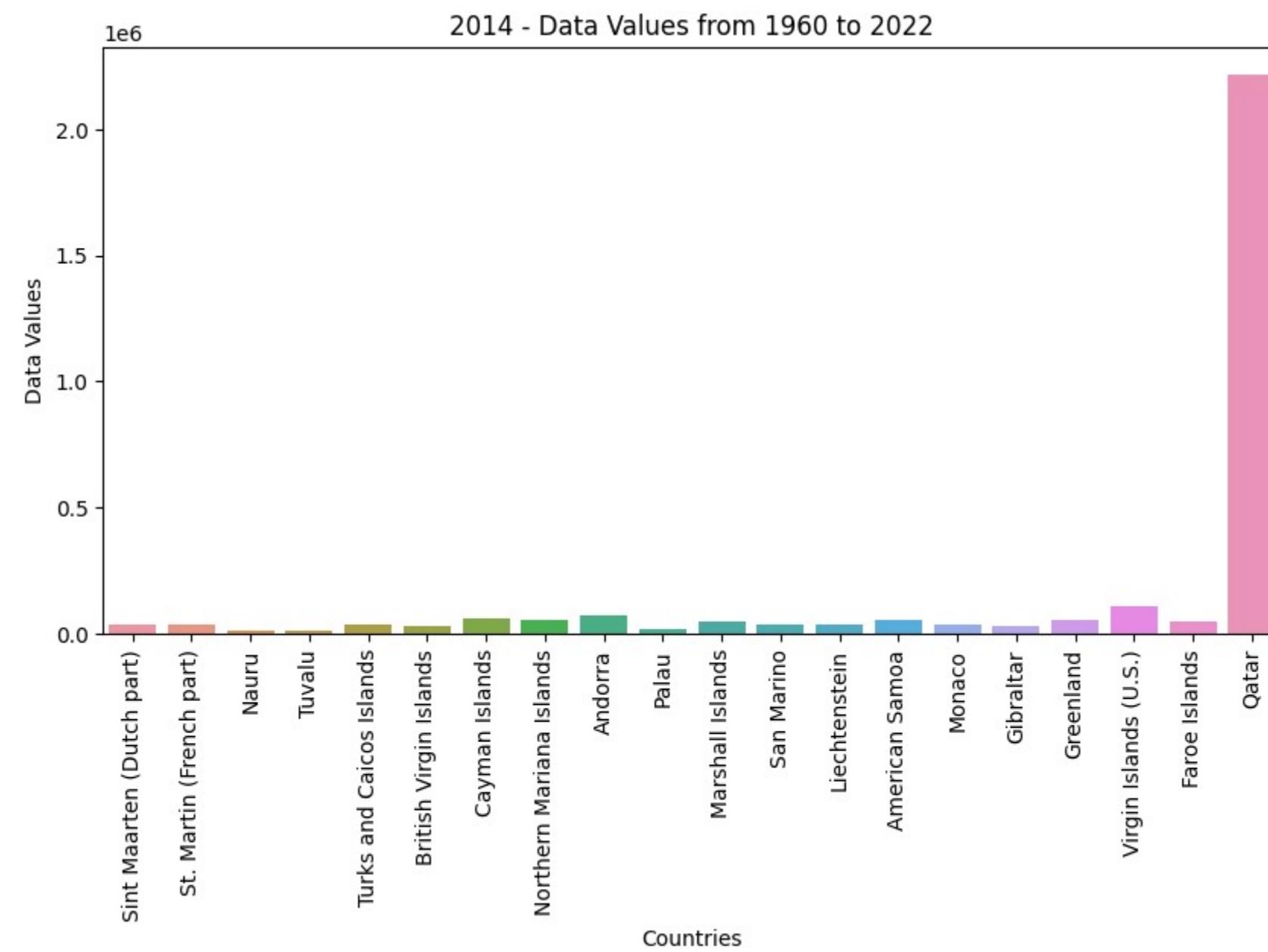


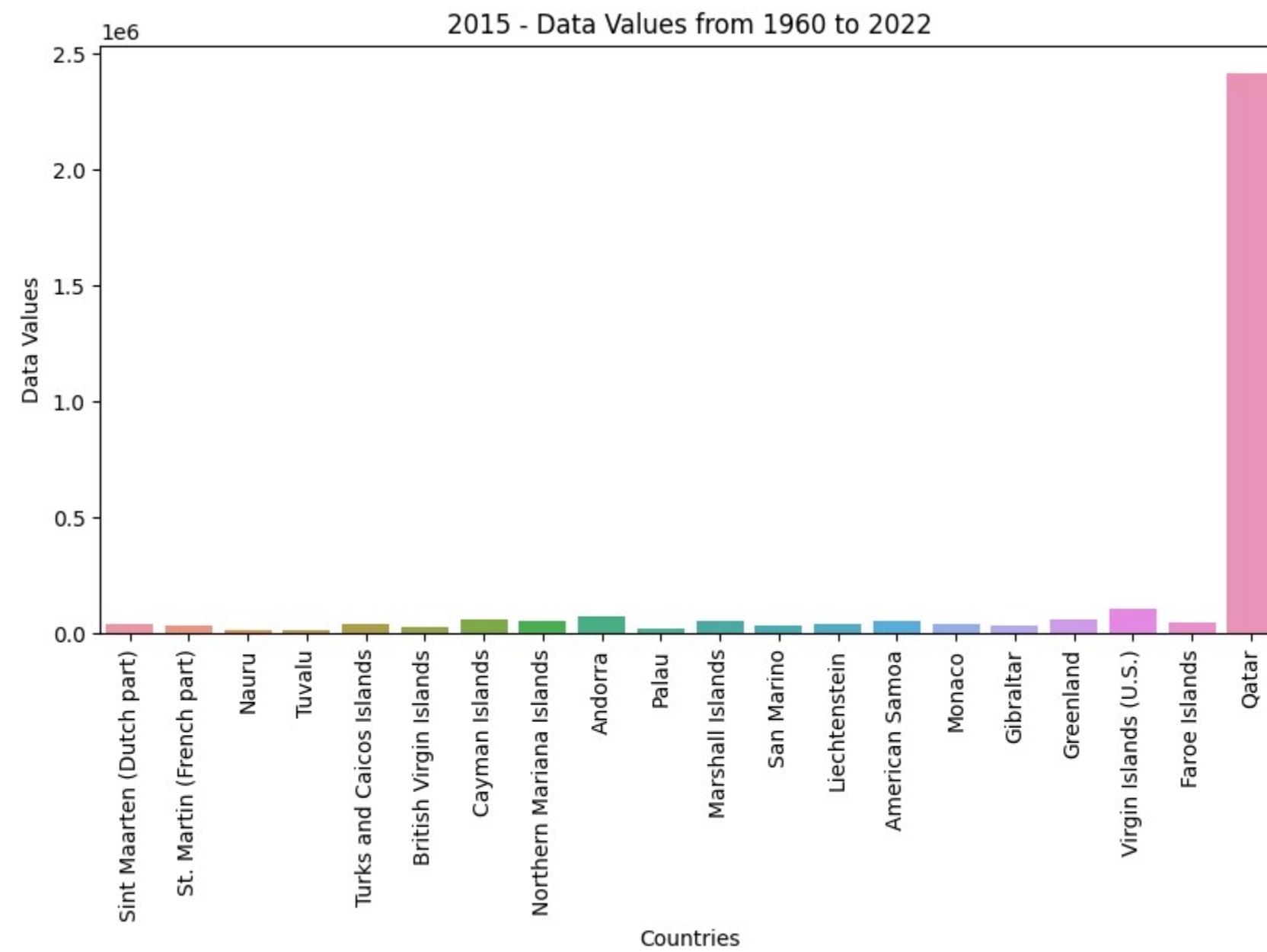


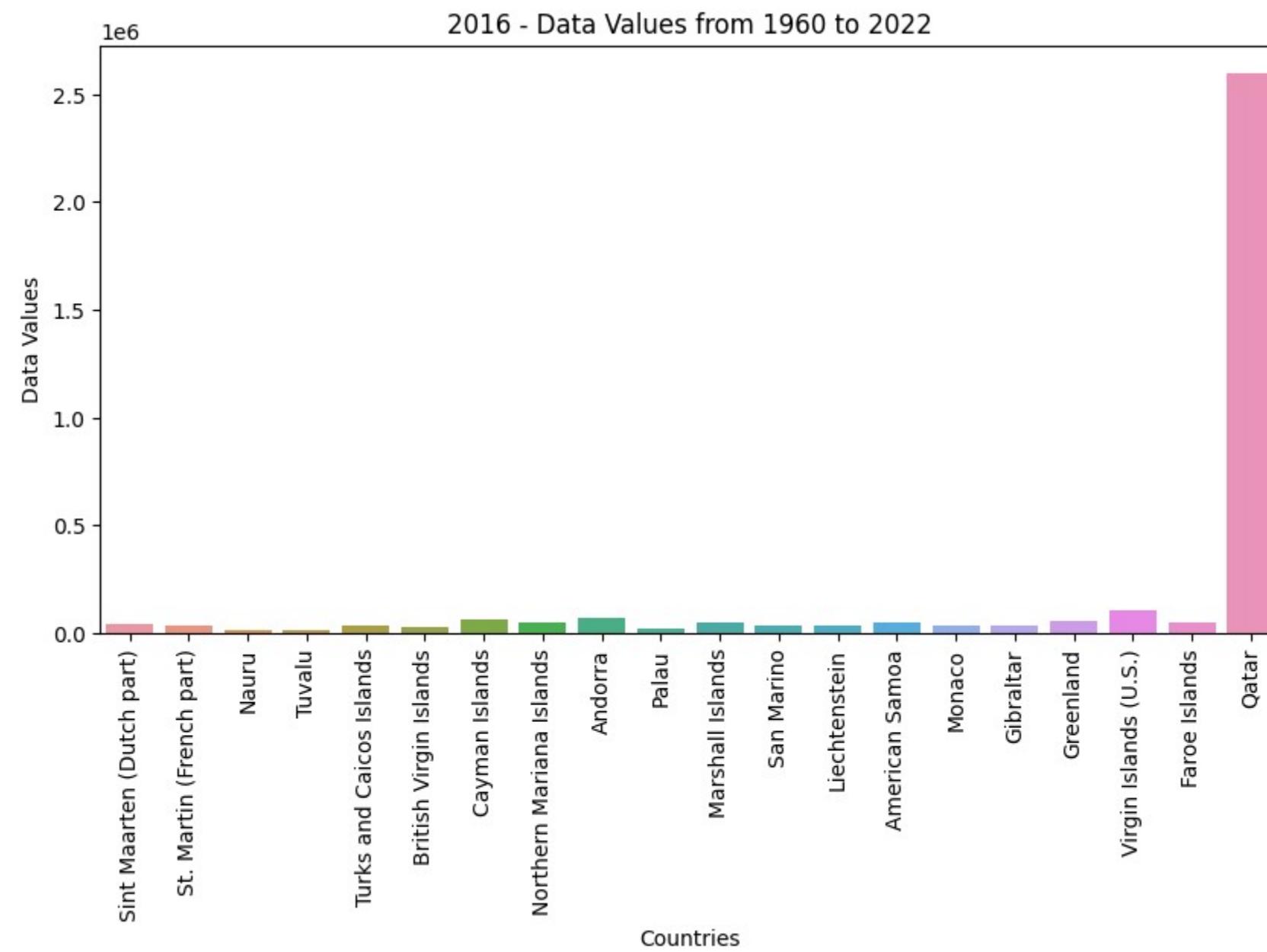


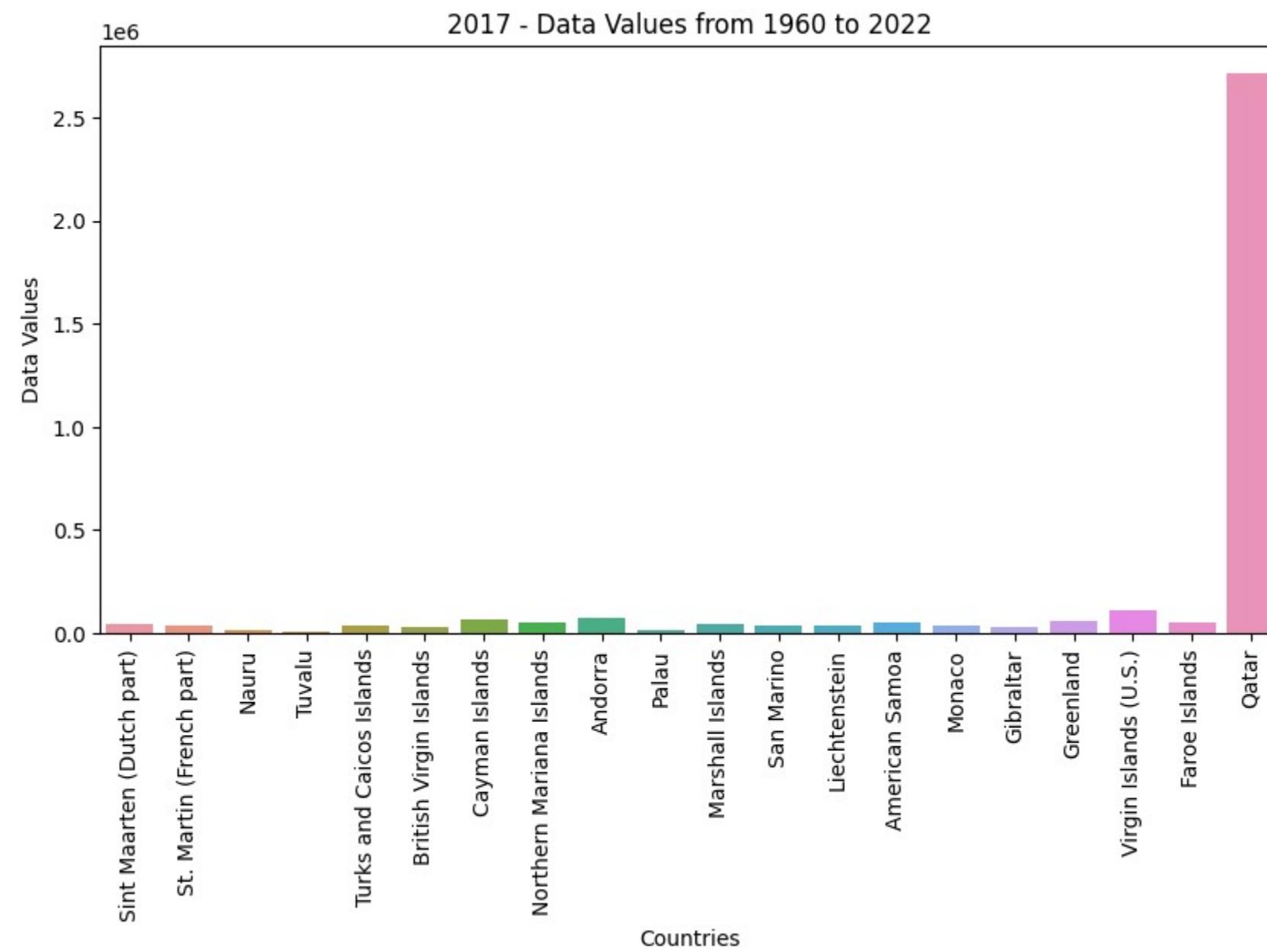


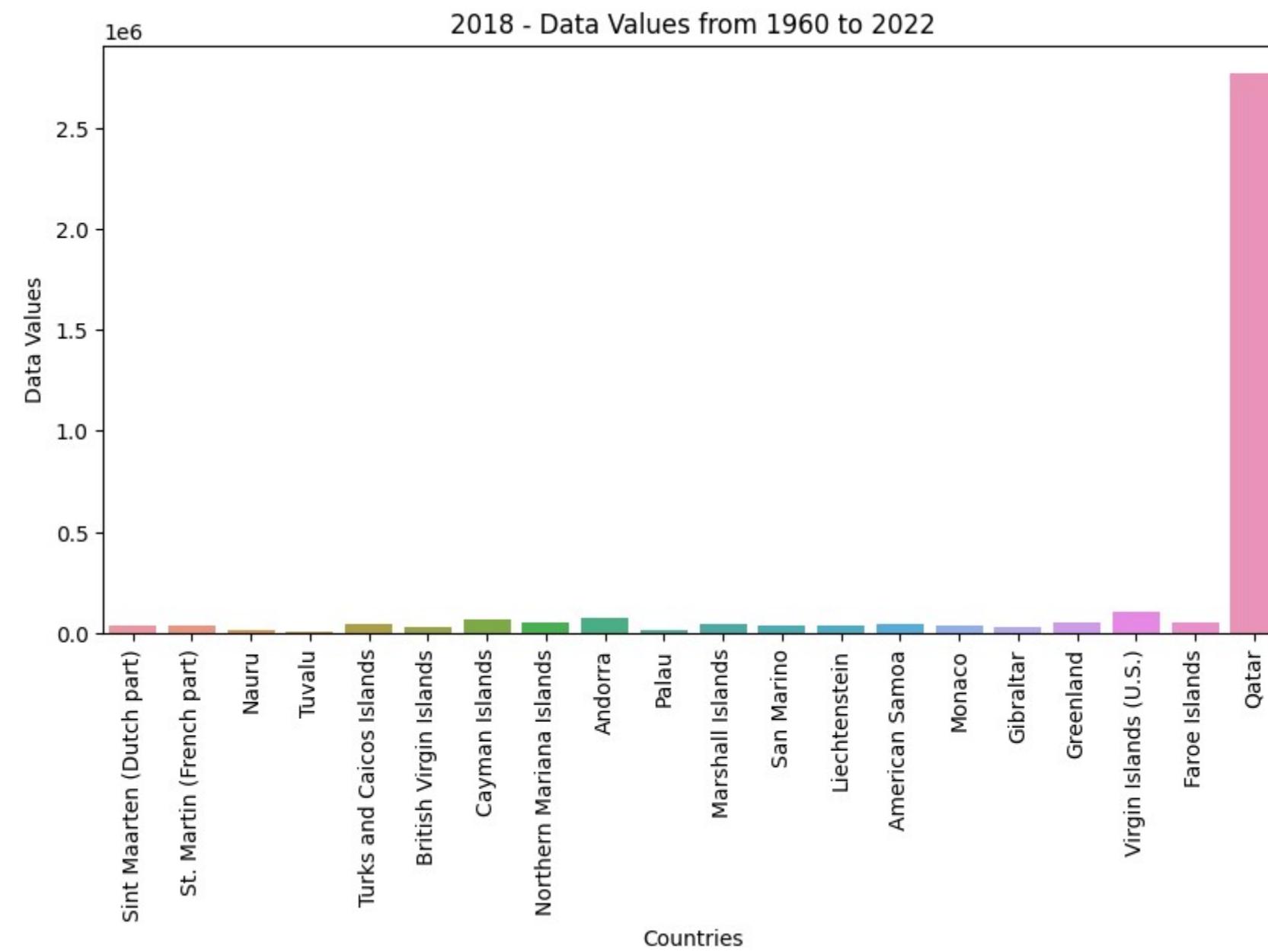


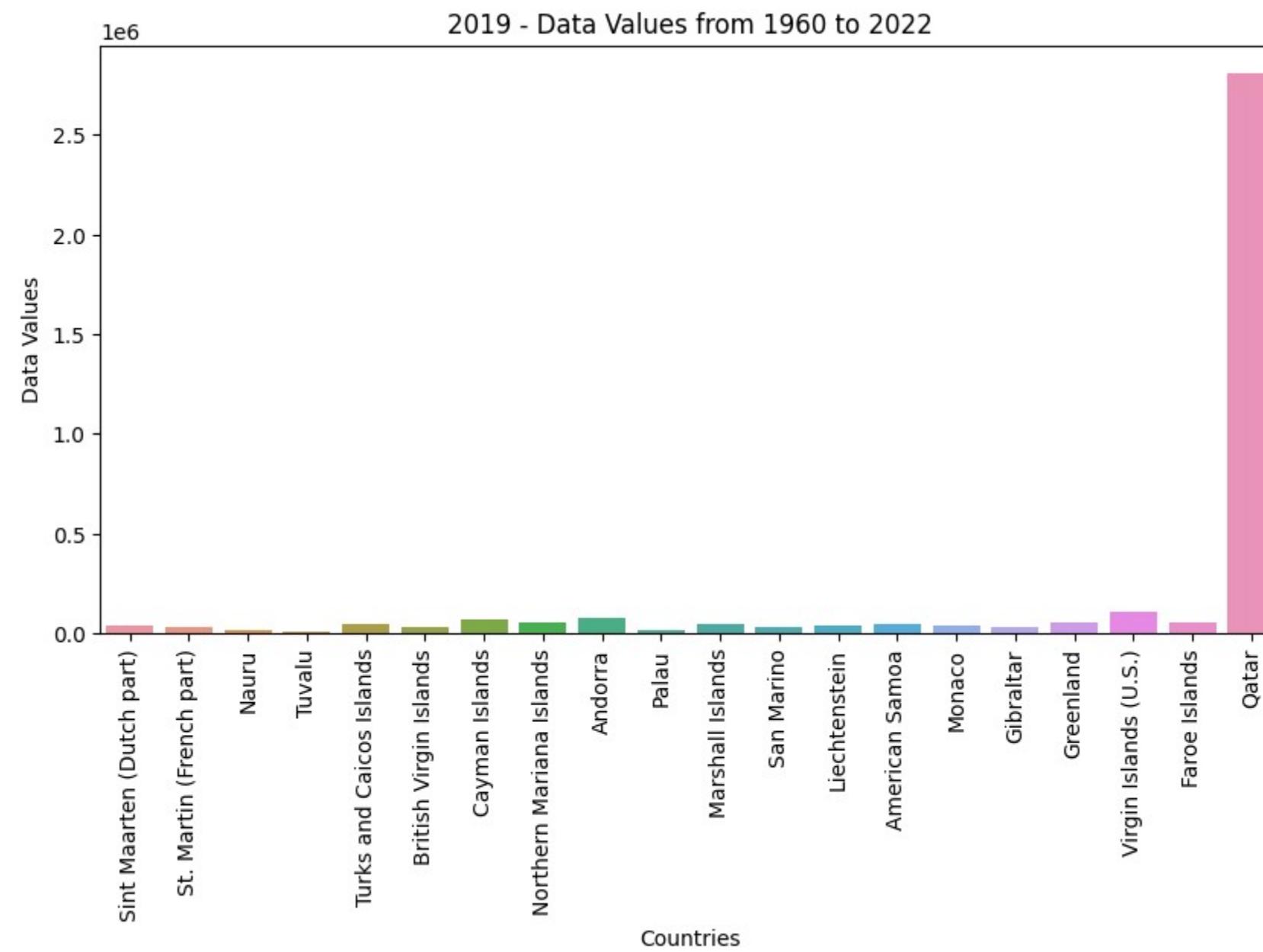


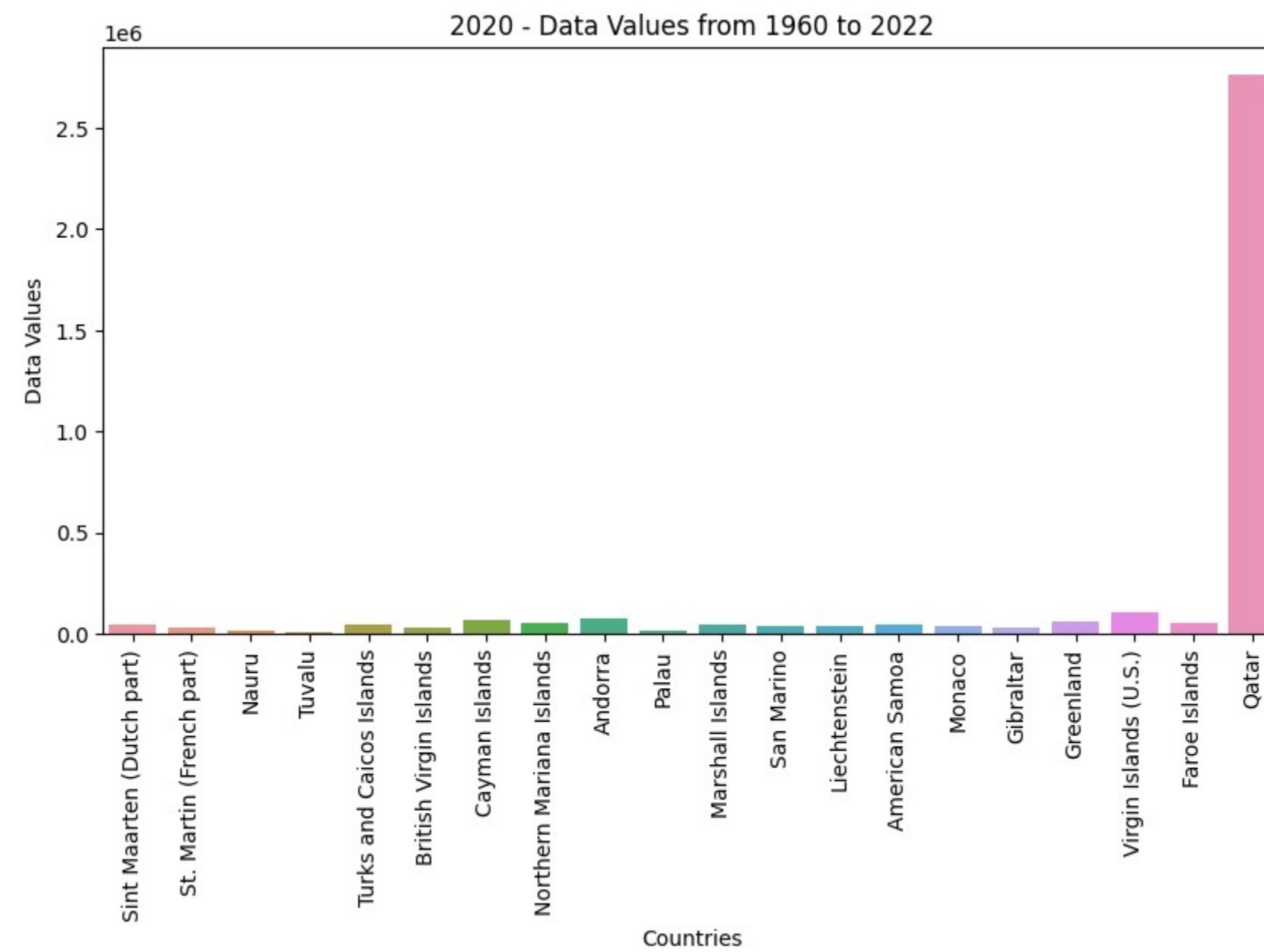


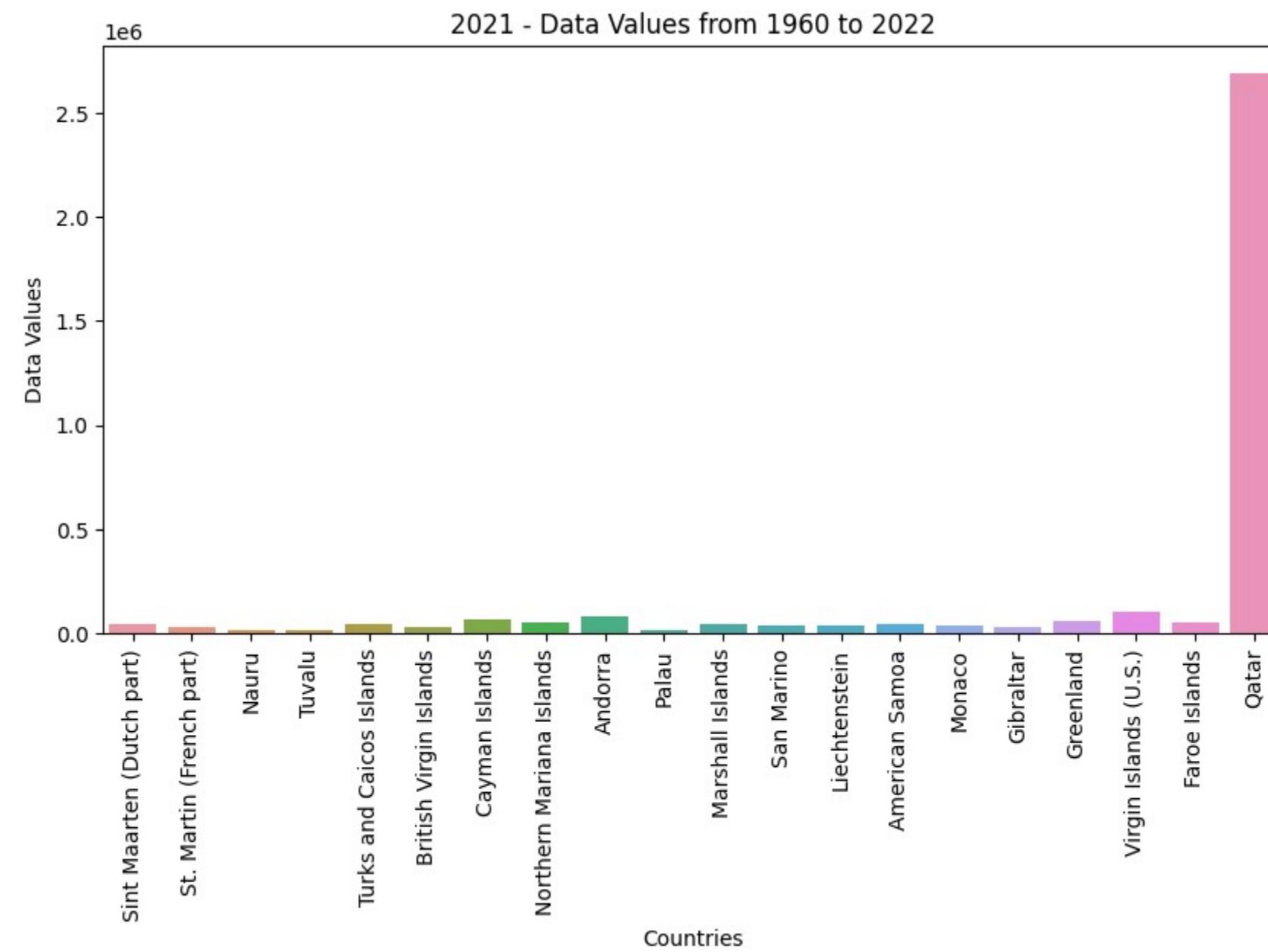


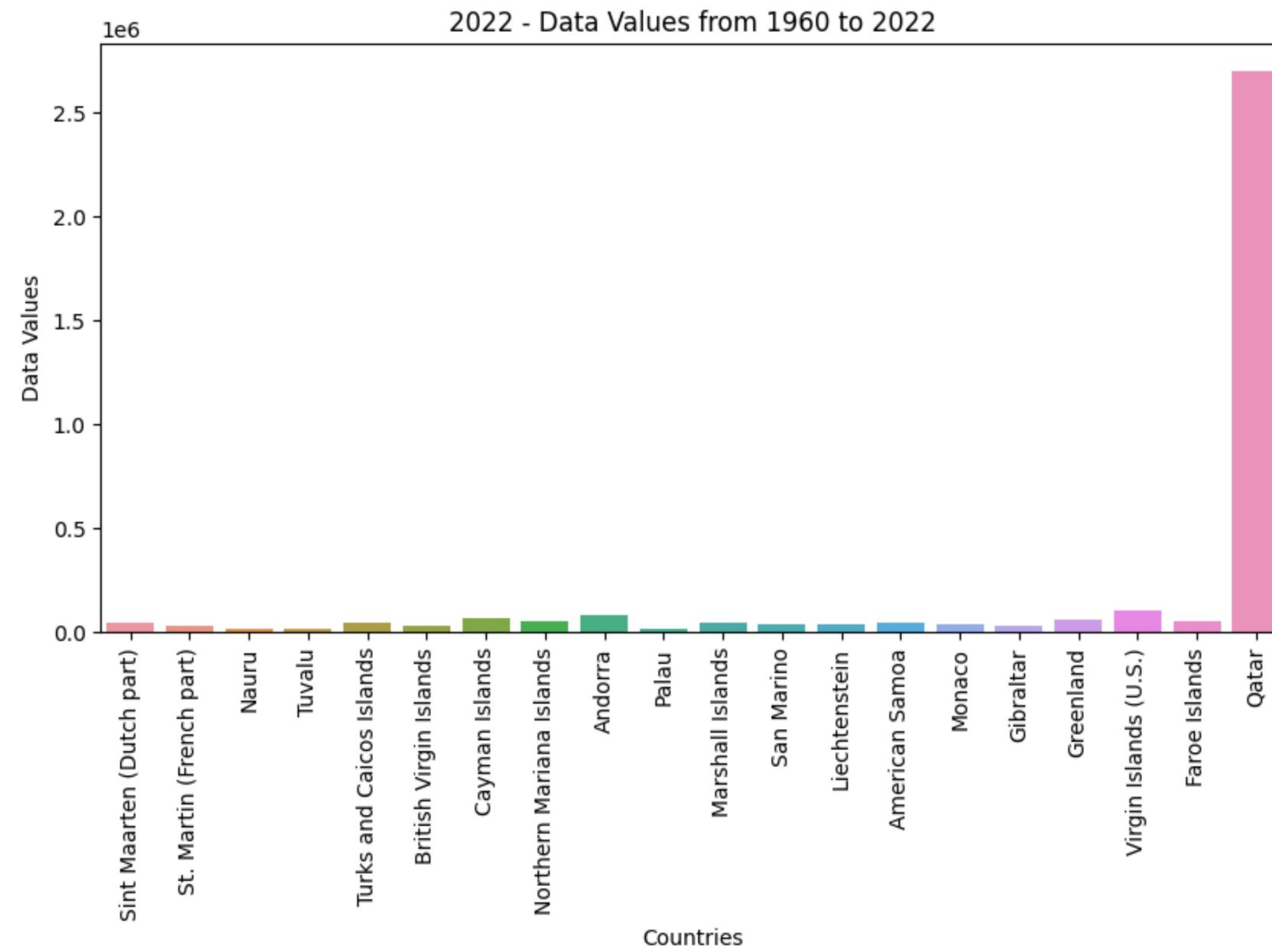












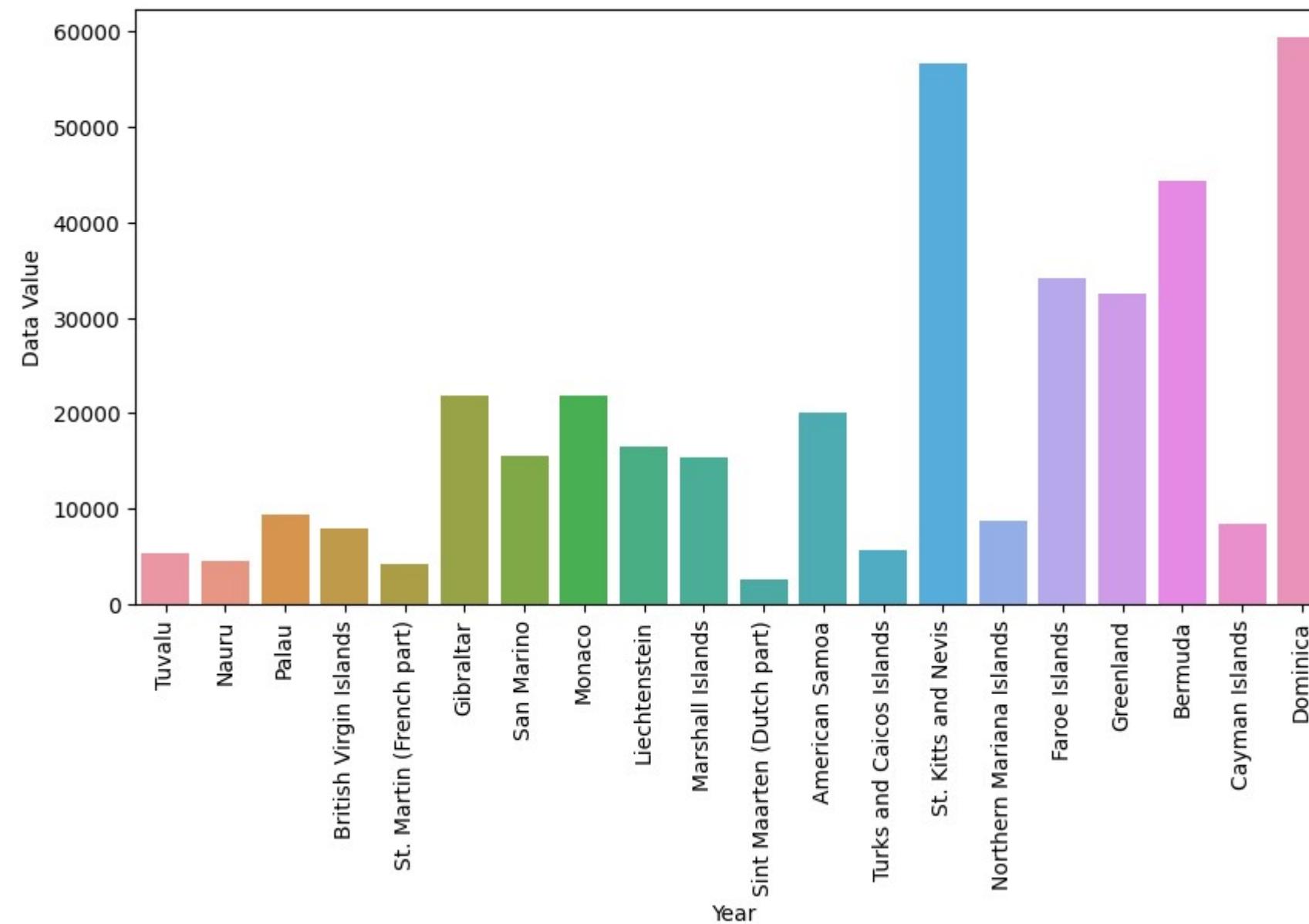
```
In [26]: country_by_2022 = df.sort_values(by='2022').head(20)
country_by_2022
```

Out[26]:	Country Name	1960	1961	1962	1963	1964	1965	1966	1967	1968	...	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
245	Tuvalu	5404.0	5436.0	5471.0	5503.0	5525.0	5548.0	5591.0	5657.0	5729.0	...	10918.0	10899.0	10877.0	10852.0	10828.0	10865.0	10956.0	11069.0	11204.0	11312.0
179	Nauru	4582.0	4753.0	4950.0	5198.0	5484.0	5804.0	6021.0	6114.0	6288.0	...	10694.0	10940.0	11185.0	11437.0	11682.0	11924.0	12132.0	12315.0	12511.0	12668.0
188	Palau	9446.0	9639.0	9851.0	10076.0	10318.0	10563.0	10813.0	10992.0	11079.0	...	17805.0	17796.0	17794.0	17816.0	17837.0	17864.0	17916.0	17972.0	18024.0	18055.0
255	British Virgin Islands	7850.0	7885.0	7902.0	7919.0	7949.0	8018.0	8139.0	8337.0	8649.0	...	28657.0	28971.0	29366.0	29739.0	30060.0	30335.0	30610.0	30910.0	31122.0	31305.0
147	St. Martin (French part)	4135.0	4258.0	4388.0	4524.0	4666.0	4832.0	5044.0	5294.0	5497.0	...	35639.0	35261.0	35020.0	34811.0	34496.0	33852.0	33121.0	32553.0	31948.0	31791.0
84	Gibraltar	21822.0	21907.0	22249.0	22796.0	23347.0	23910.0	24477.0	25047.0	25610.0	...	32411.0	32452.0	32520.0	32565.0	32602.0	32648.0	32685.0	32709.0	32669.0	32649.0
212	San Marino	15556.0	15895.0	16242.0	16583.0	16926.0	17273.0	17588.0	17907.0	18291.0	...	33285.0	33389.0	33570.0	33834.0	34056.0	34156.0	34178.0	34007.0	33745.0	33660.0
149	Monaco	21797.0	21907.0	22106.0	22442.0	22766.0	23022.0	23198.0	23281.0	23481.0	...	35425.0	36110.0	36760.0	37071.0	37044.0	37029.0	37034.0	36922.0	36686.0	36469.0
137	Liechtenstein	16472.0	16834.0	17221.0	17625.0	18058.0	18500.0	18957.0	19467.0	20011.0	...	36806.0	37096.0	37355.0	37609.0	37889.0	38181.0	38482.0	38756.0	39039.0	39327.0
155	Marshall Islands	15374.0	15867.0	16387.0	16947.0	17537.0	18154.0	18794.0	19665.0	21001.0	...	51352.0	50419.0	49410.0	48329.0	47187.0	45989.0	44728.0	43413.0	42050.0	41569.0
225	Sint Maarten (Dutch part)	2646.0	2888.0	3171.0	3481.0	3811.0	4161.0	4531.0	4930.0	5354.0	...	36607.0	37685.0	38825.0	39969.0	40574.0	40895.0	41608.0	42310.0	42846.0	43389.0
11	American Samoa	20085.0	20626.0	21272.0	21949.0	22656.0	23391.0	24122.0	24848.0	25608.0	...	52995.0	52217.0	51368.0	50448.0	49463.0	48424.0	47321.0	46189.0	45035.0	44273.0
228	Turks and Caicos Islands	5604.0	5625.0	5633.0	5634.0	5642.0	5650.0	5652.0	5662.0	5668.0	...	33594.0	34985.0	36538.0	38246.0	39844.0	41487.0	43080.0	44276.0	45114.0	45703.0
125	St. Kitts and Nevis	56660.0	56247.0	55404.0	54391.0	53255.0	52016.0	50683.0	49269.0	47772.0	...	47767.0	47789.0	47790.0	47788.0	47785.0	47761.0	47712.0	47642.0	47606.0	47657.0
164	Northern Mariana Islands	8702.0	8965.0	9252.0	9561.0	9890.0	10229.0	10577.0	10720.0	10440.0	...	52141.0	51856.0	51514.0	51133.0	50729.0	50304.0	49858.0	49587.0	49481.0	49551.0
78	Faroe Islands	34154.0	34572.0	34963.0	35385.0	35841.0	36346.0	36825.0	37234.0	37630.0	...	48418.0	48465.0	48816.0	49500.0	50230.0	50955.0	51681.0	52415.0	52889.0	53090.0
91	Greenland	32500.0	33700.0	35000.0	36400.0	37600.0	39200.0	40500.0	41900.0	43400.0	...	56483.0	56295.0	56114.0	56186.0	56172.0	56023.0	56225.0	56367.0	56653.0	56661.0
27	Bermuda	44400.0	45500.0	46600.0	47700.0	48900.0	50100.0	51000.0	52000.0	53000.0	...	65001.0	65138.0	65237.0	64554.0	63873.0	63918.0	63911.0	63893.0	63764.0	63532.0
52	Cayman Islands	8473.0	8626.0	8799.0	8985.0	9172.0	9366.0	9566.0	9771.0	9981.0	...	58212.0	59559.0	60911.0	62255.0	63581.0	64884.0	66134.0	67311.0	68136.0	68706.0
57	Dominica	59379.0	60395.0	61224.0	62031.0	62843.0	63744.0	64728.0	65760.0	66865.0	...	68819.0	69371.0	70007.0	70075.0	70403.0	70823.0	71428.0	71995.0	72412.0	72737.0

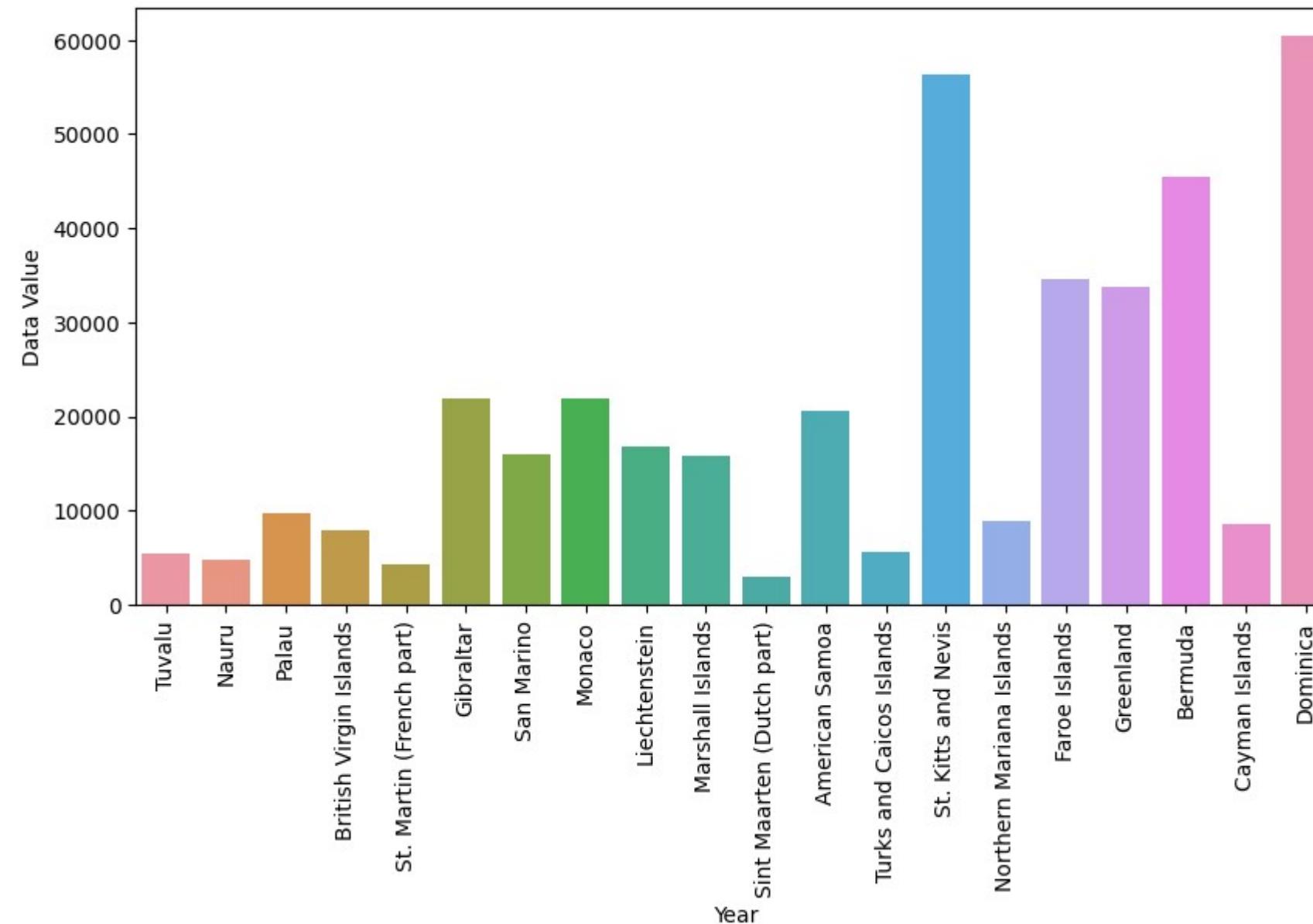
20 rows × 64 columns

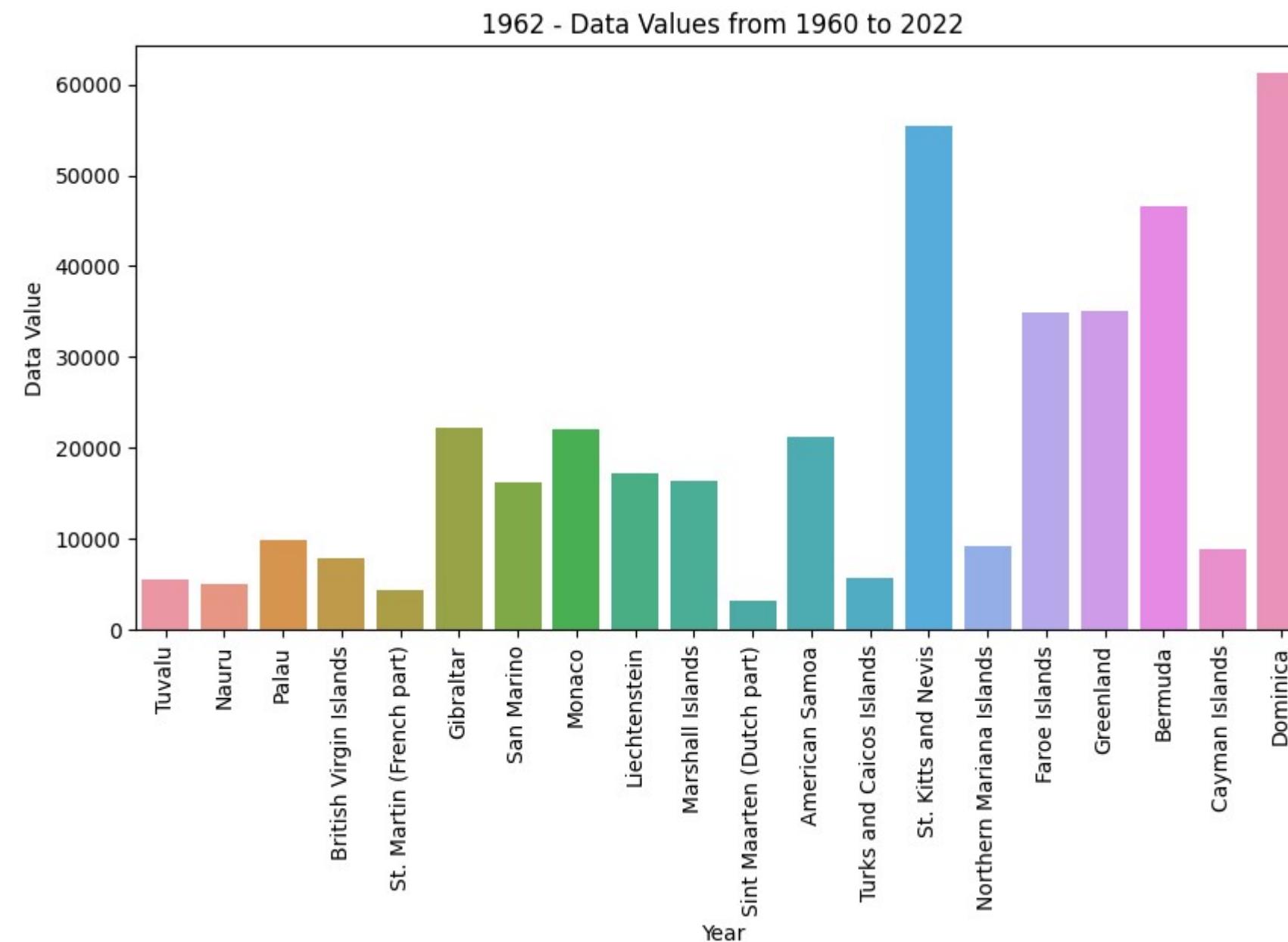
```
In [28]: country_by_2022_t = country_by_2022.set_index('Country Name').T
for country_name, data_values in country_by_2022_t.iterrows():
    fig = plt.figure(figsize=(10, 5))
    sns.barplot(x=data_values.index, y=data_values.values)
    plt.xlabel('Year')
    plt.ylabel('Data Value')
    plt.title(f'{country_name} - Data Values from 1960 to 2022')
    plt.xticks(rotation=90)
    plt.show()
```

1960 - Data Values from 1960 to 2022

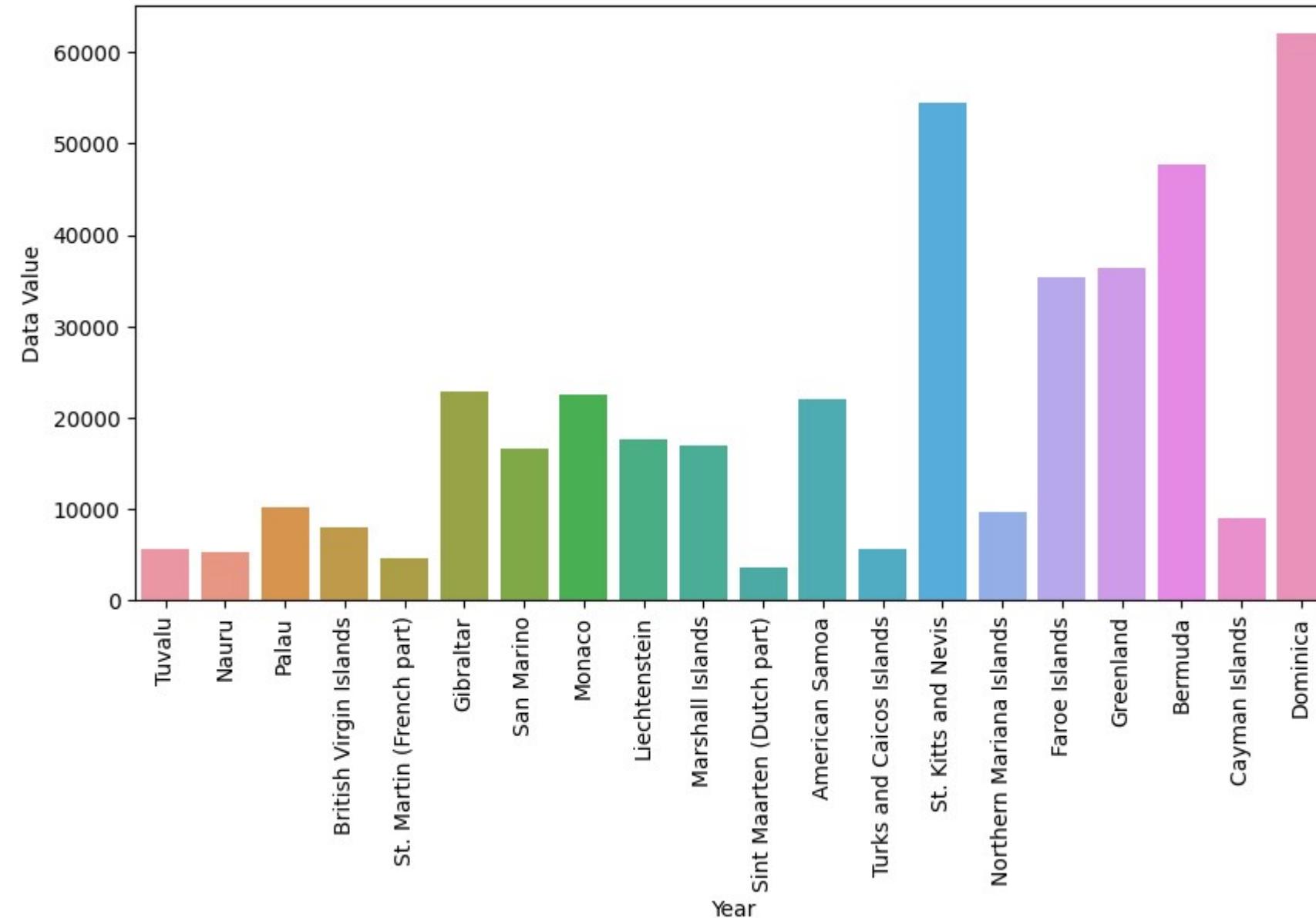


1961 - Data Values from 1960 to 2022

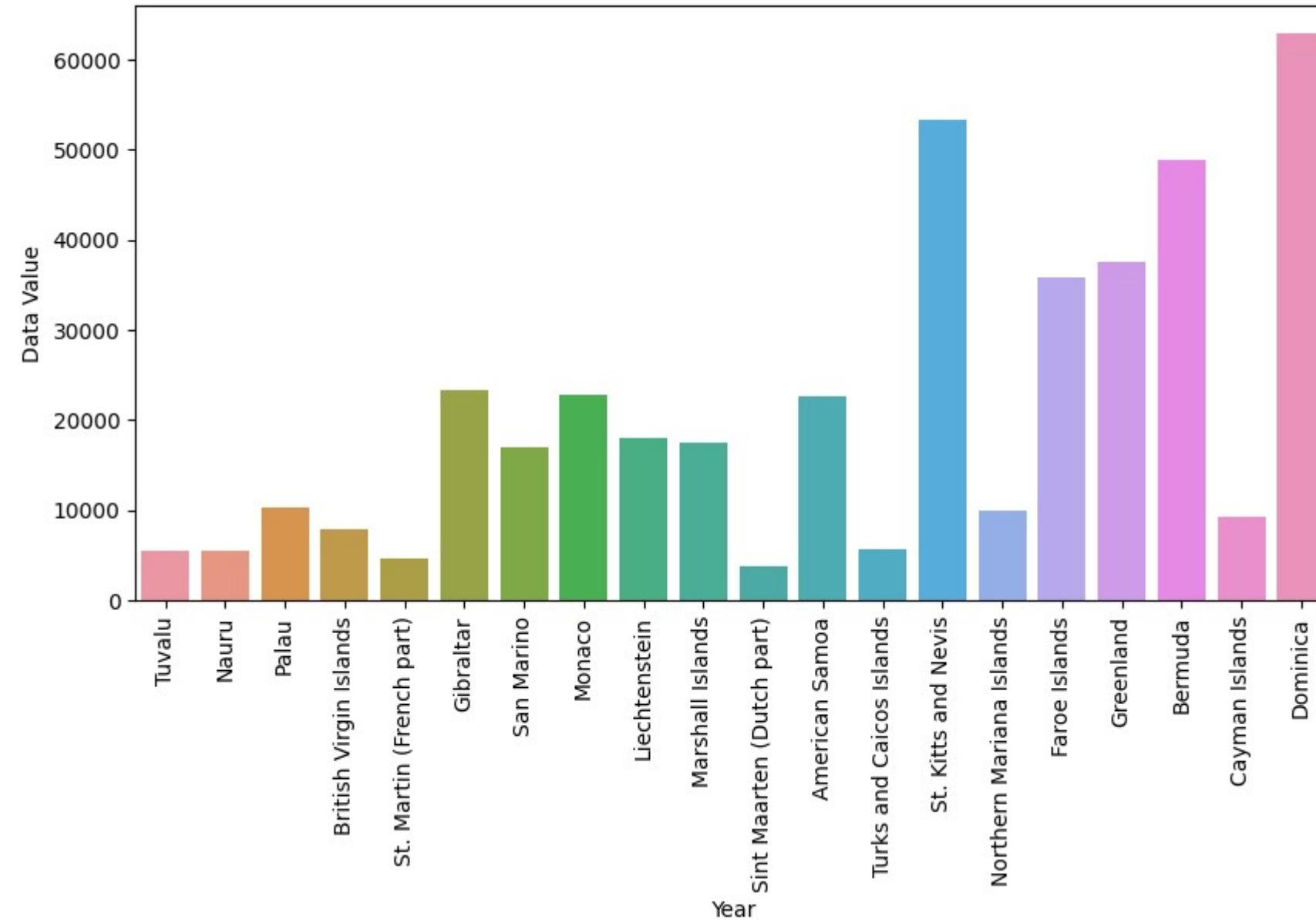




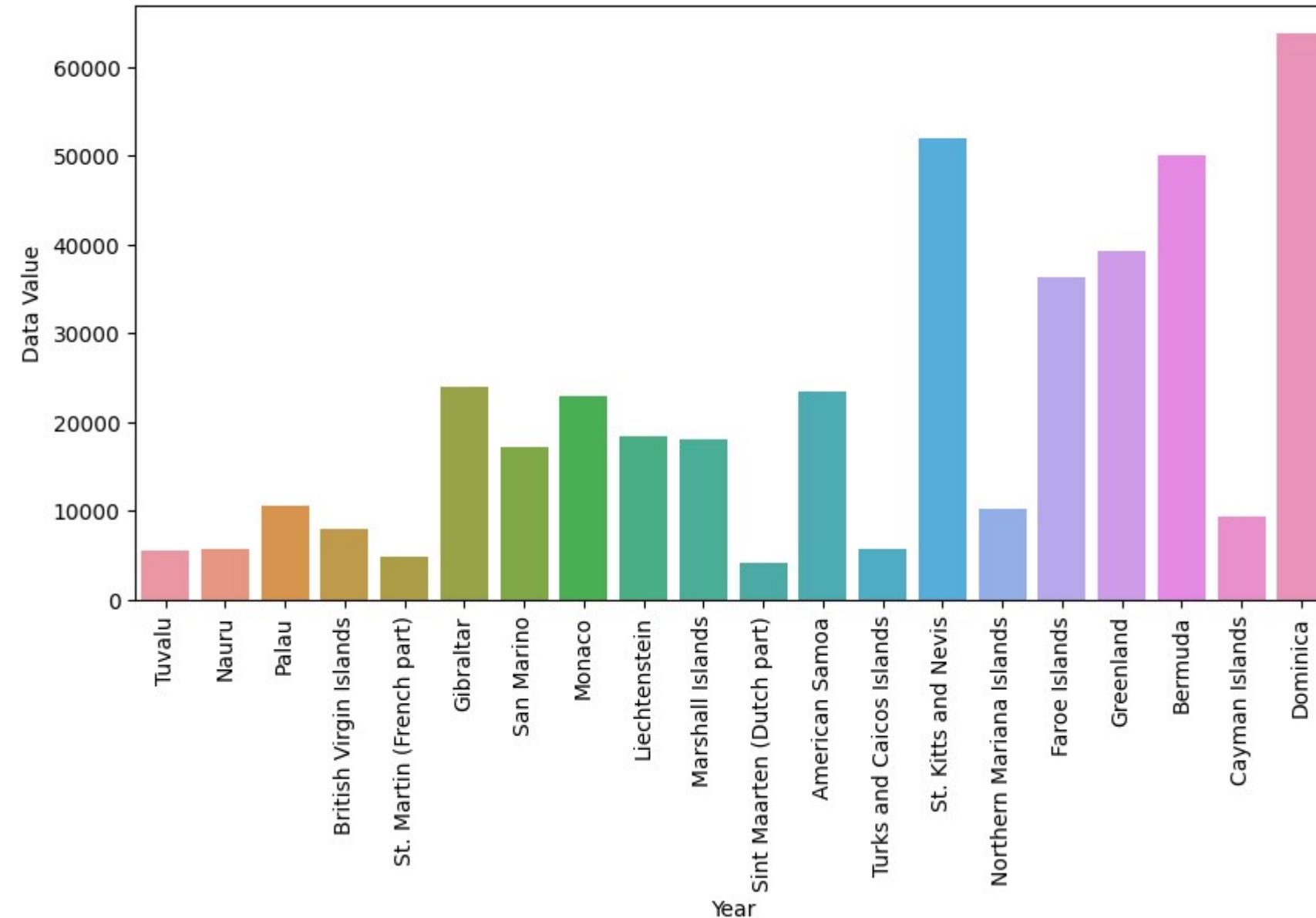
1963 - Data Values from 1960 to 2022

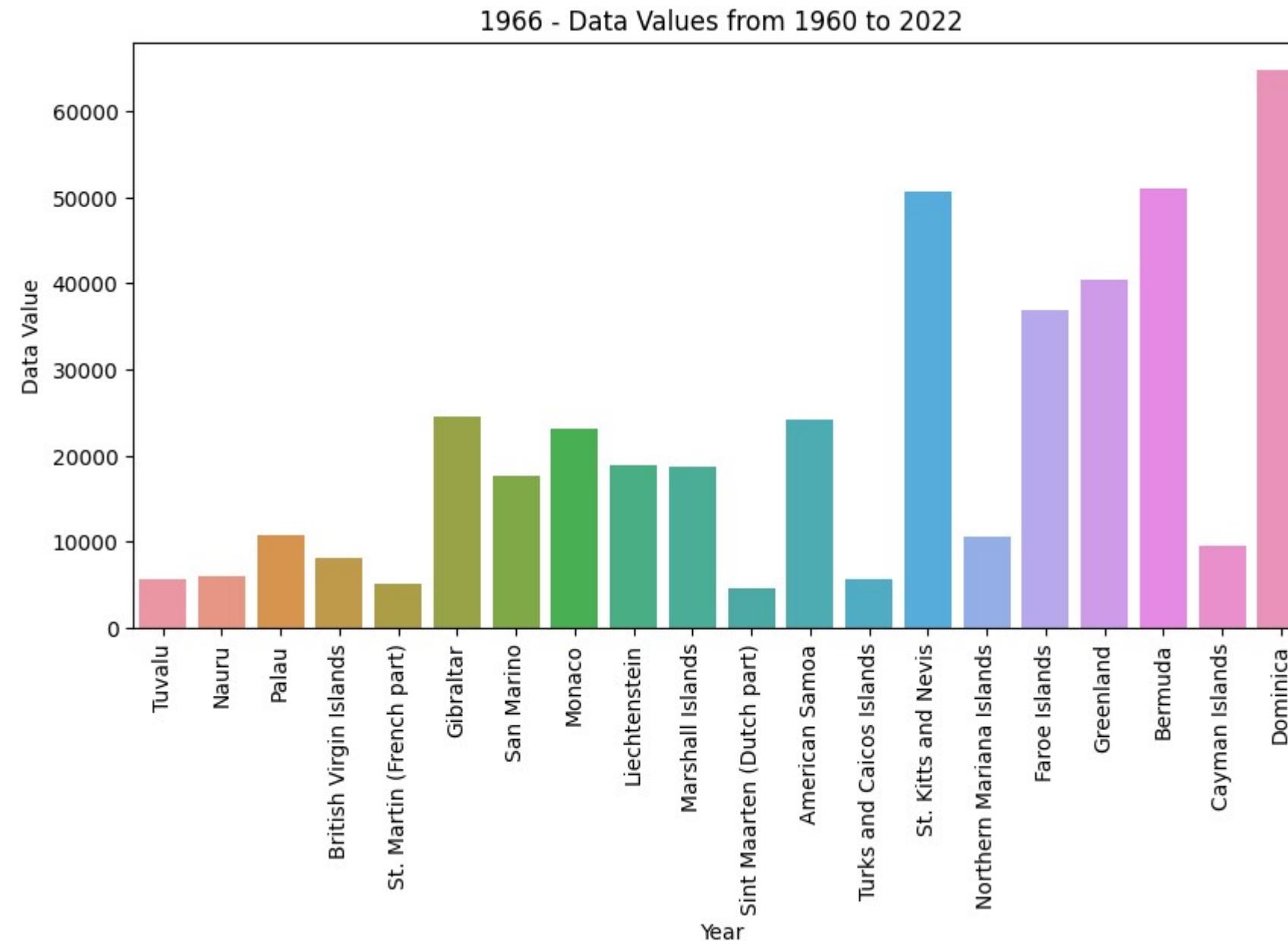


1964 - Data Values from 1960 to 2022

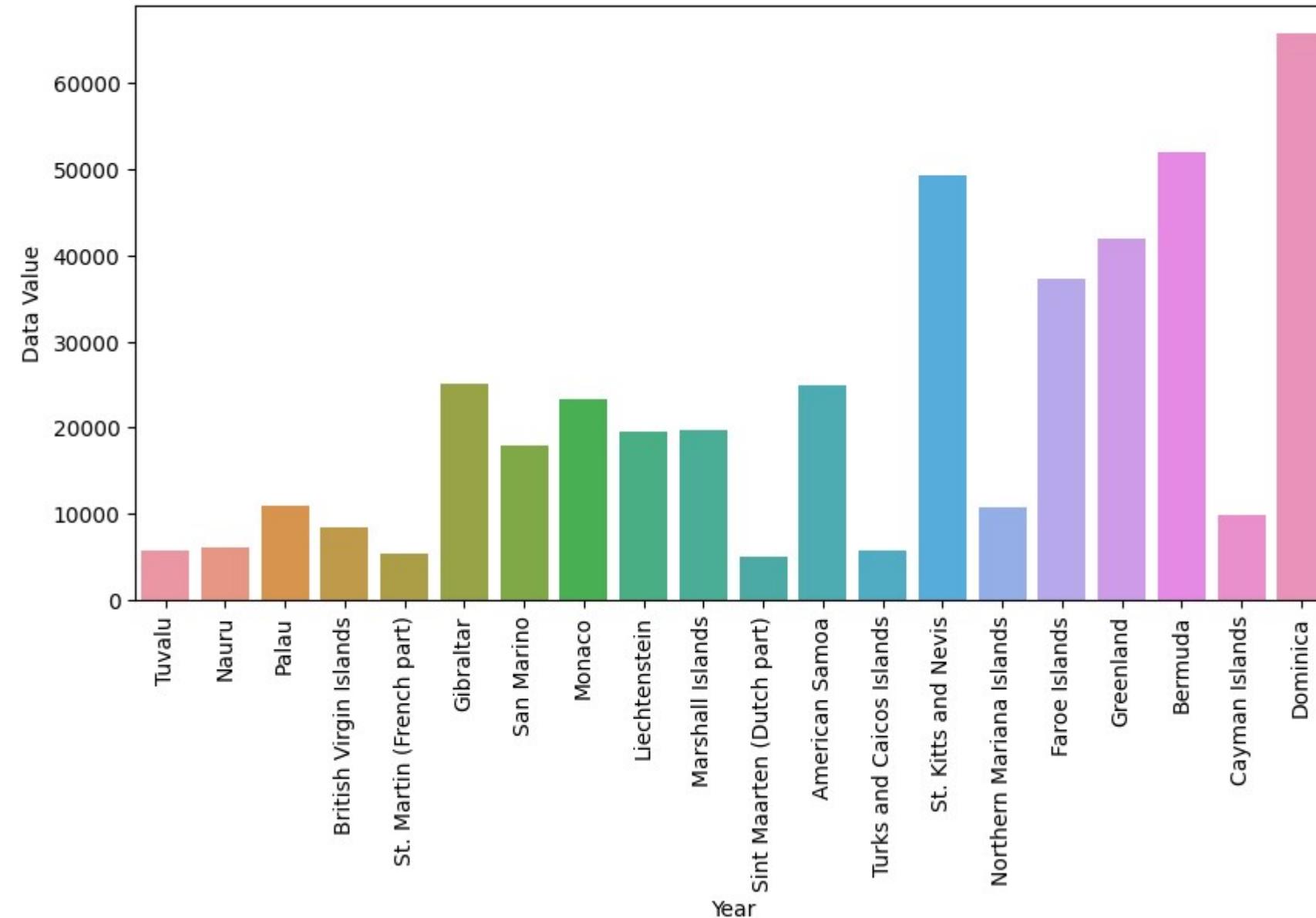


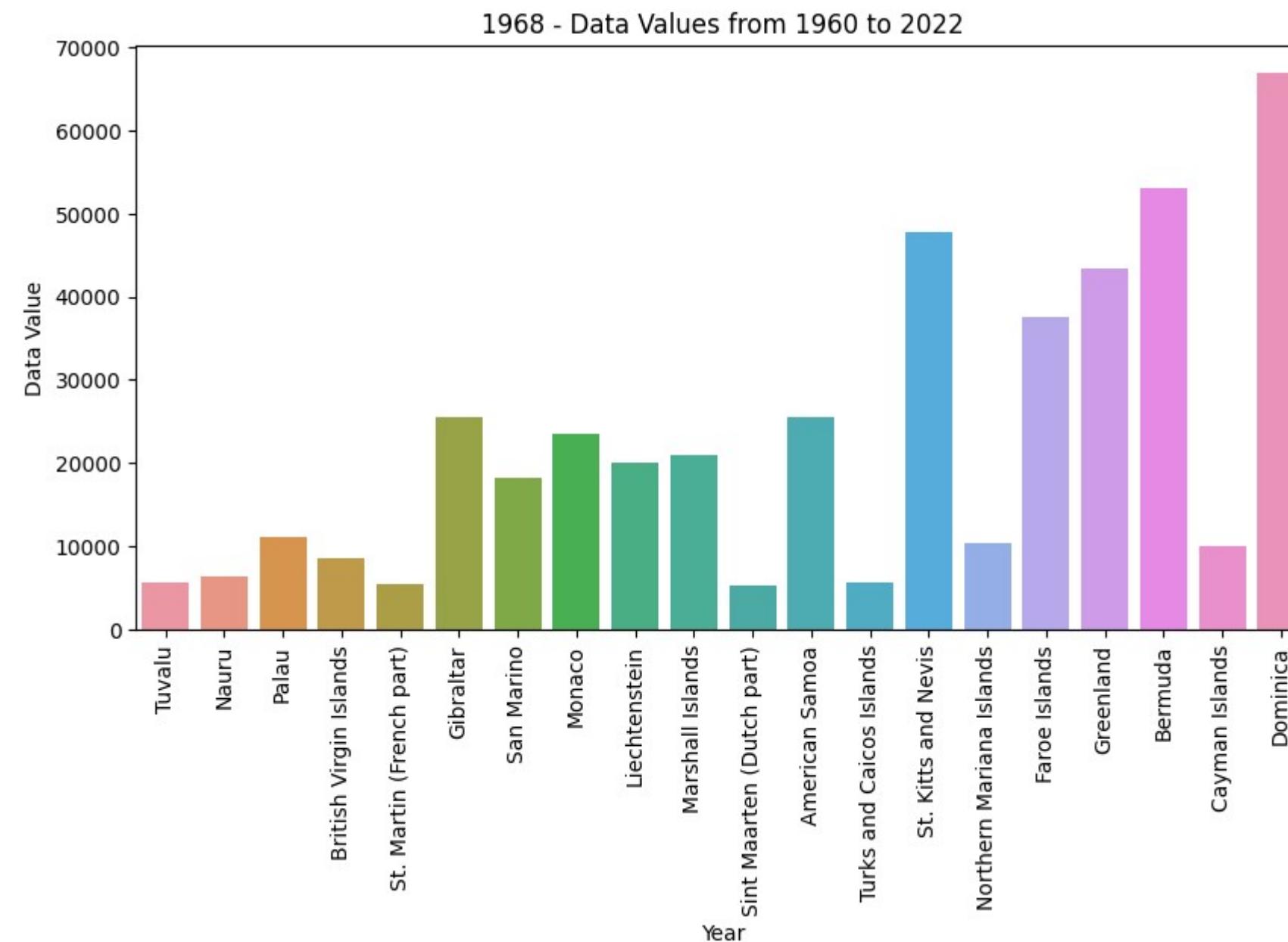
1965 - Data Values from 1960 to 2022



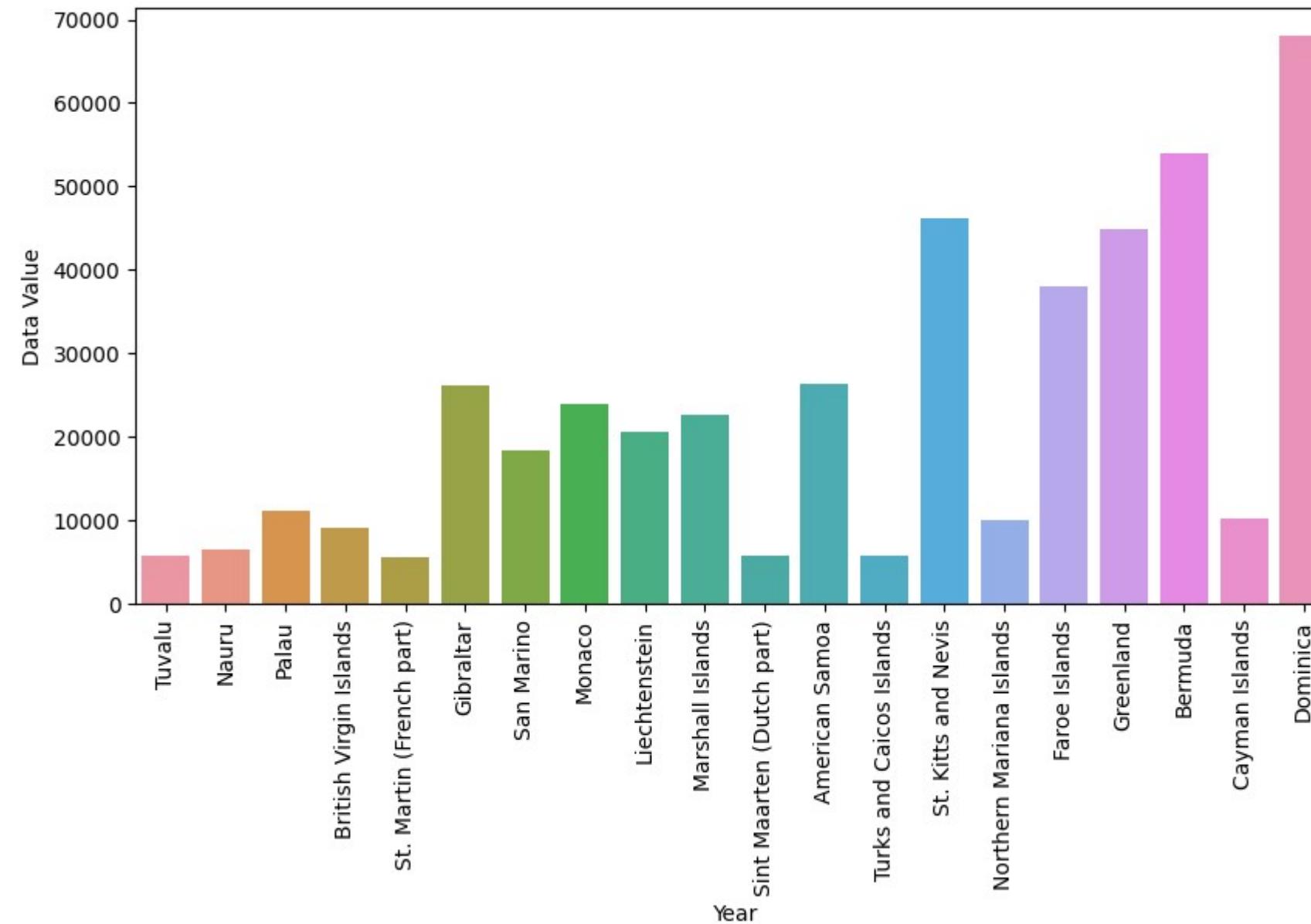


1967 - Data Values from 1960 to 2022

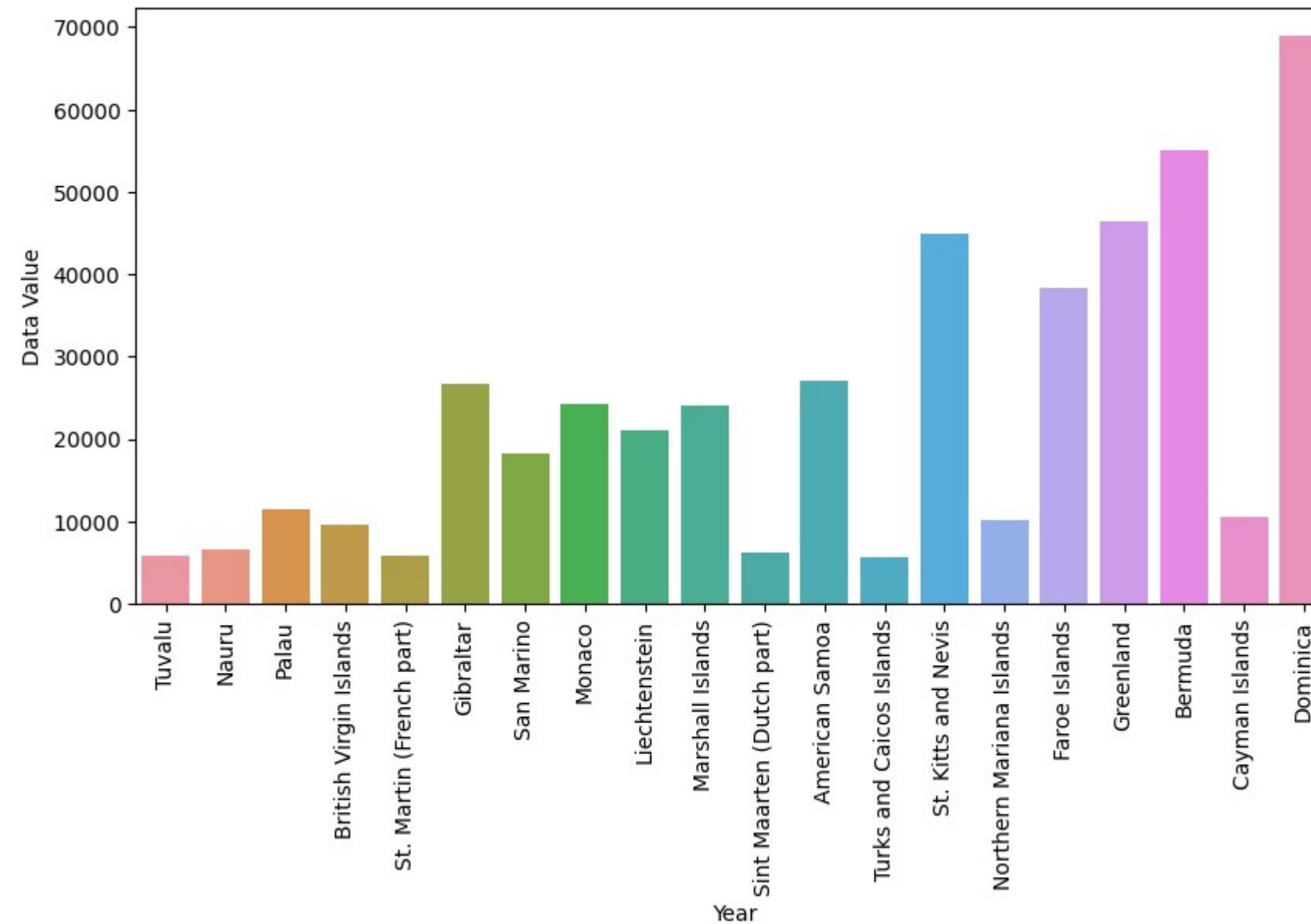




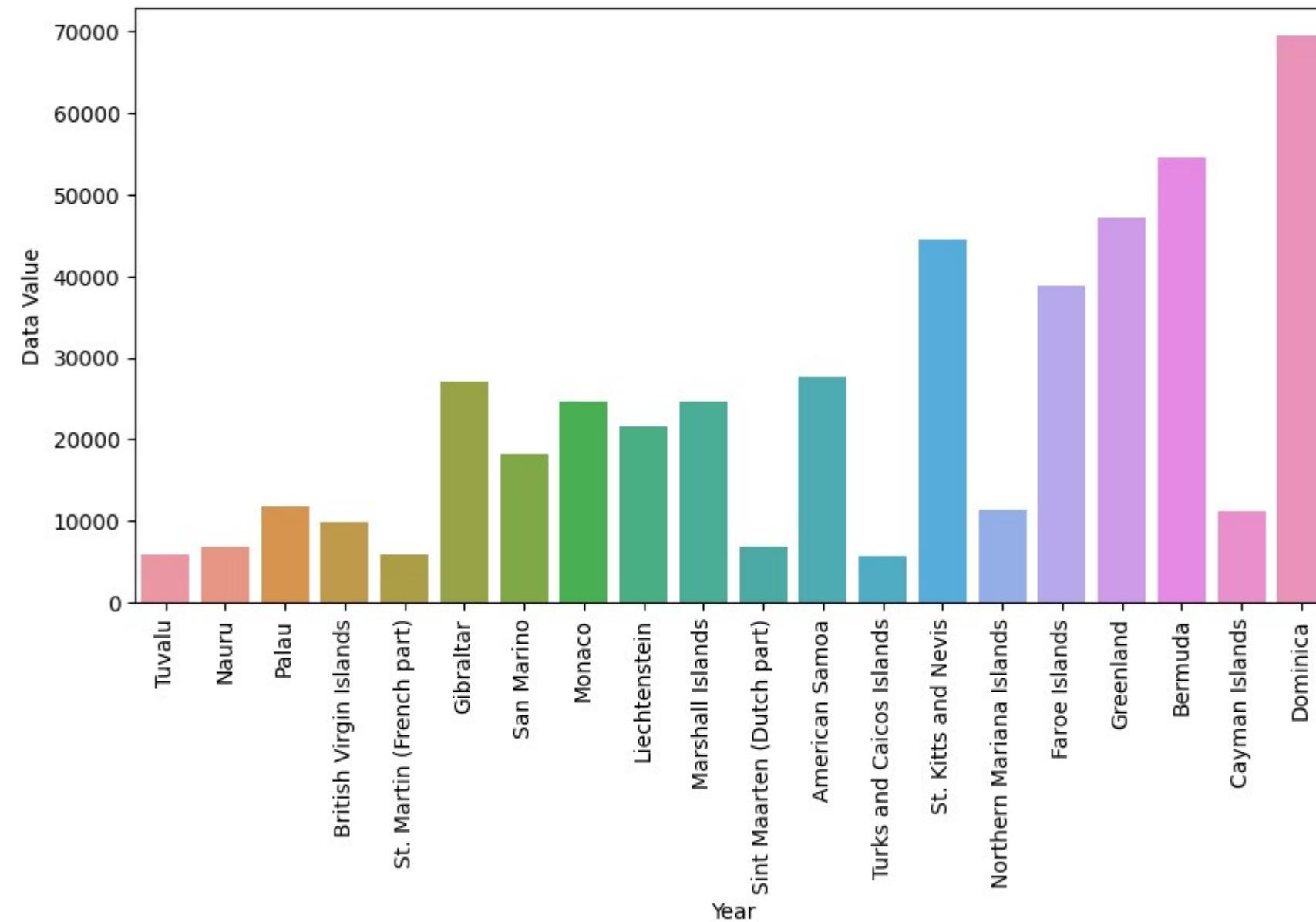
1969 - Data Values from 1960 to 2022



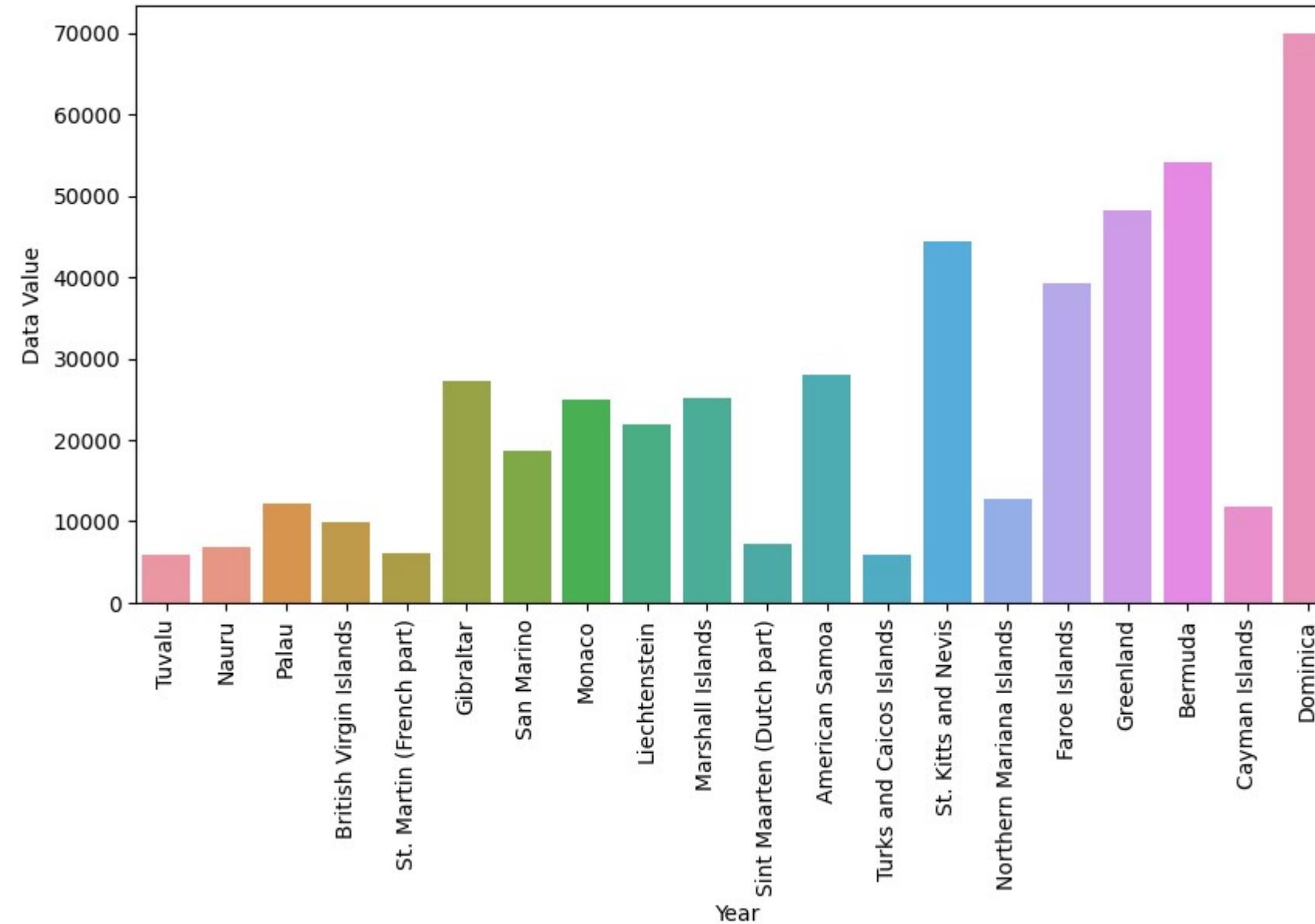
1970 - Data Values from 1960 to 2022



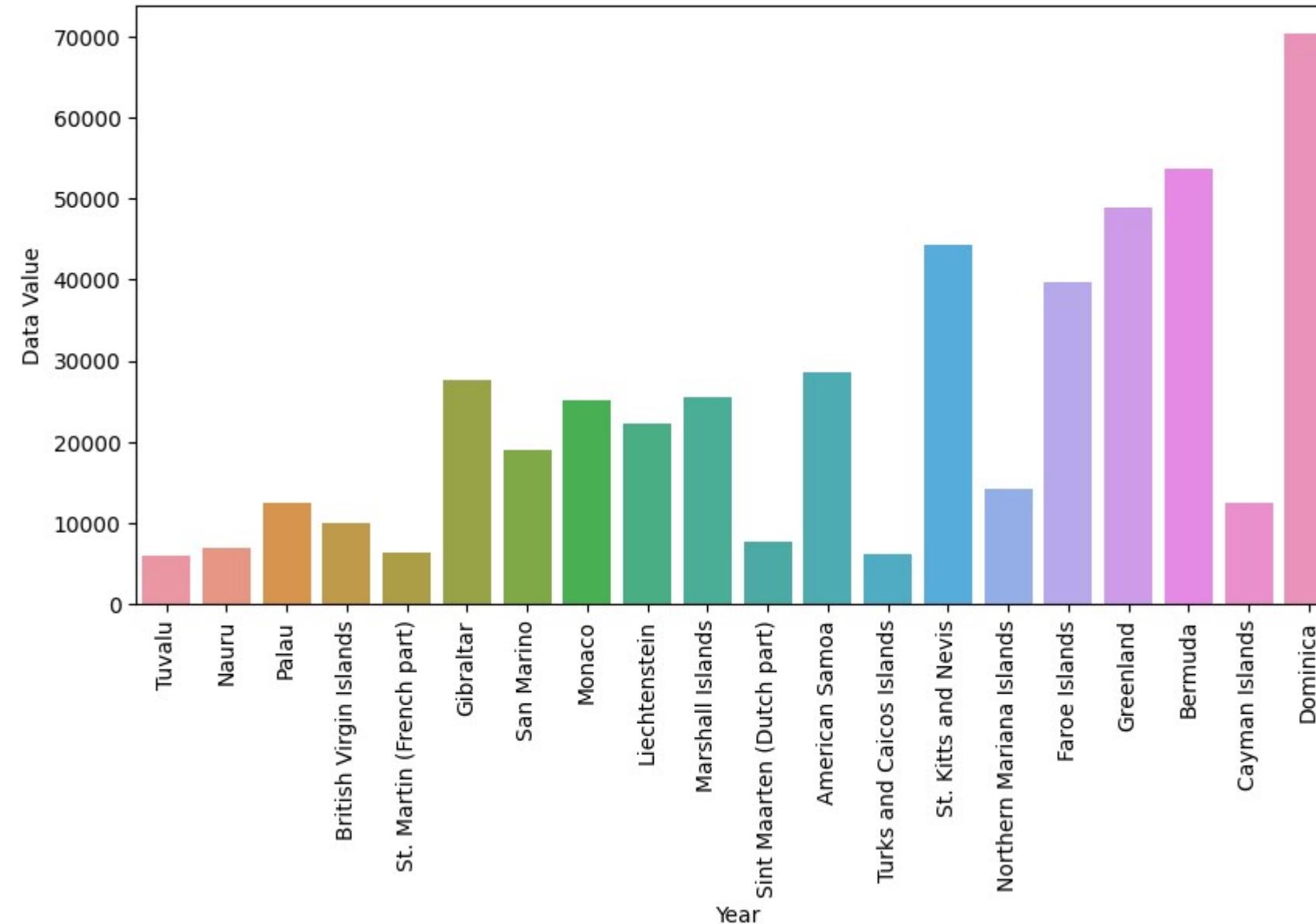
1971 - Data Values from 1960 to 2022



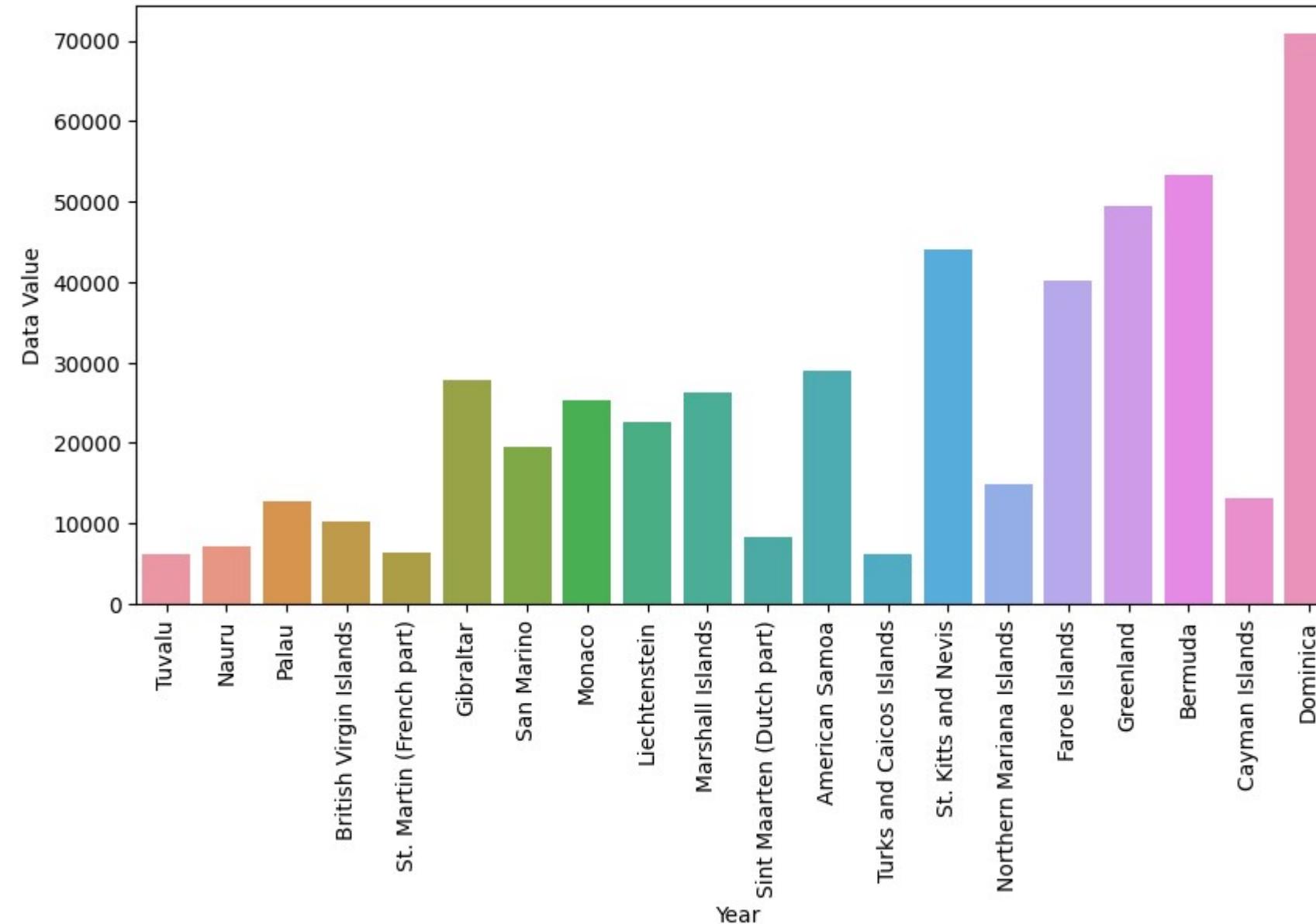
1972 - Data Values from 1960 to 2022



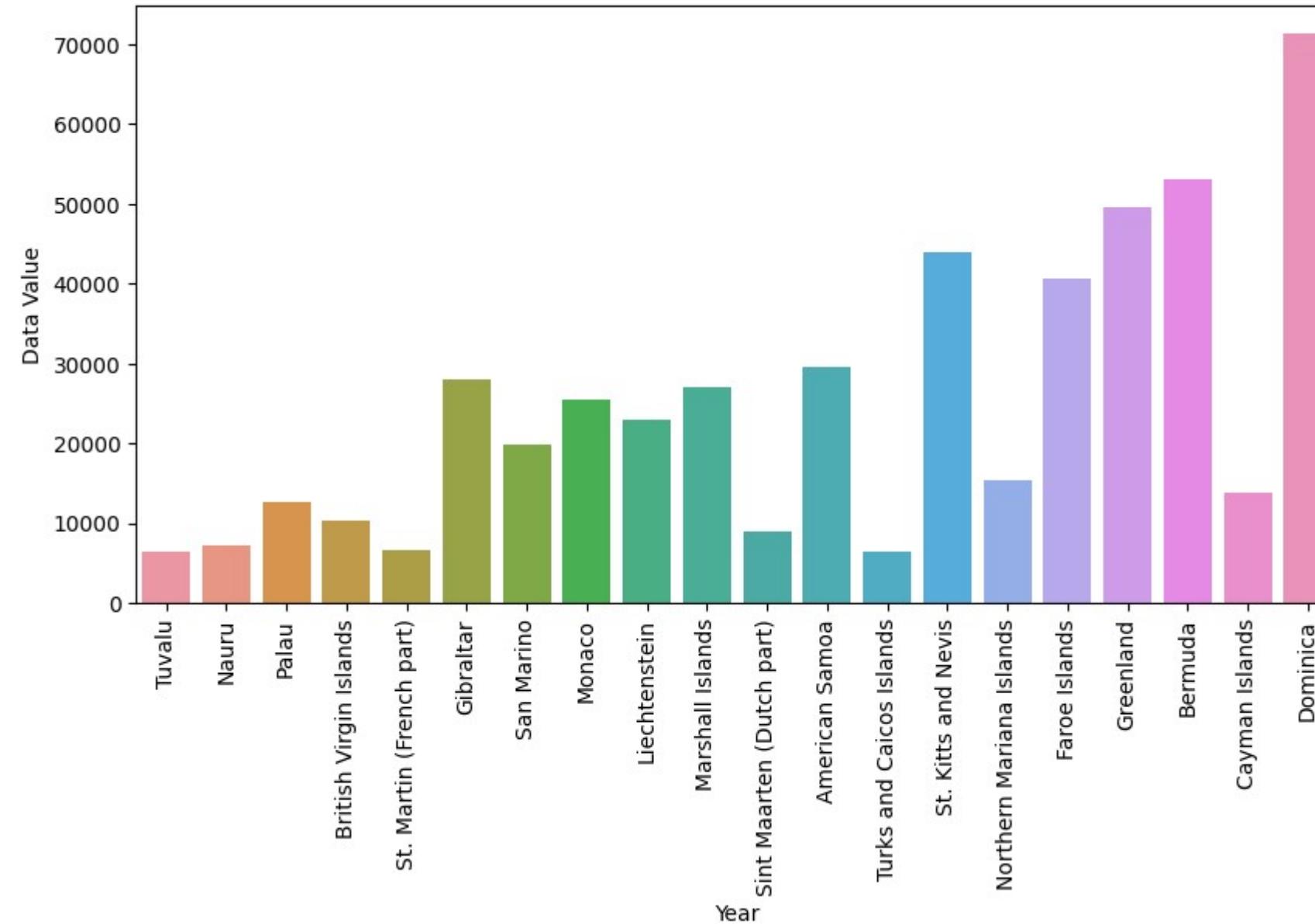
1973 - Data Values from 1960 to 2022



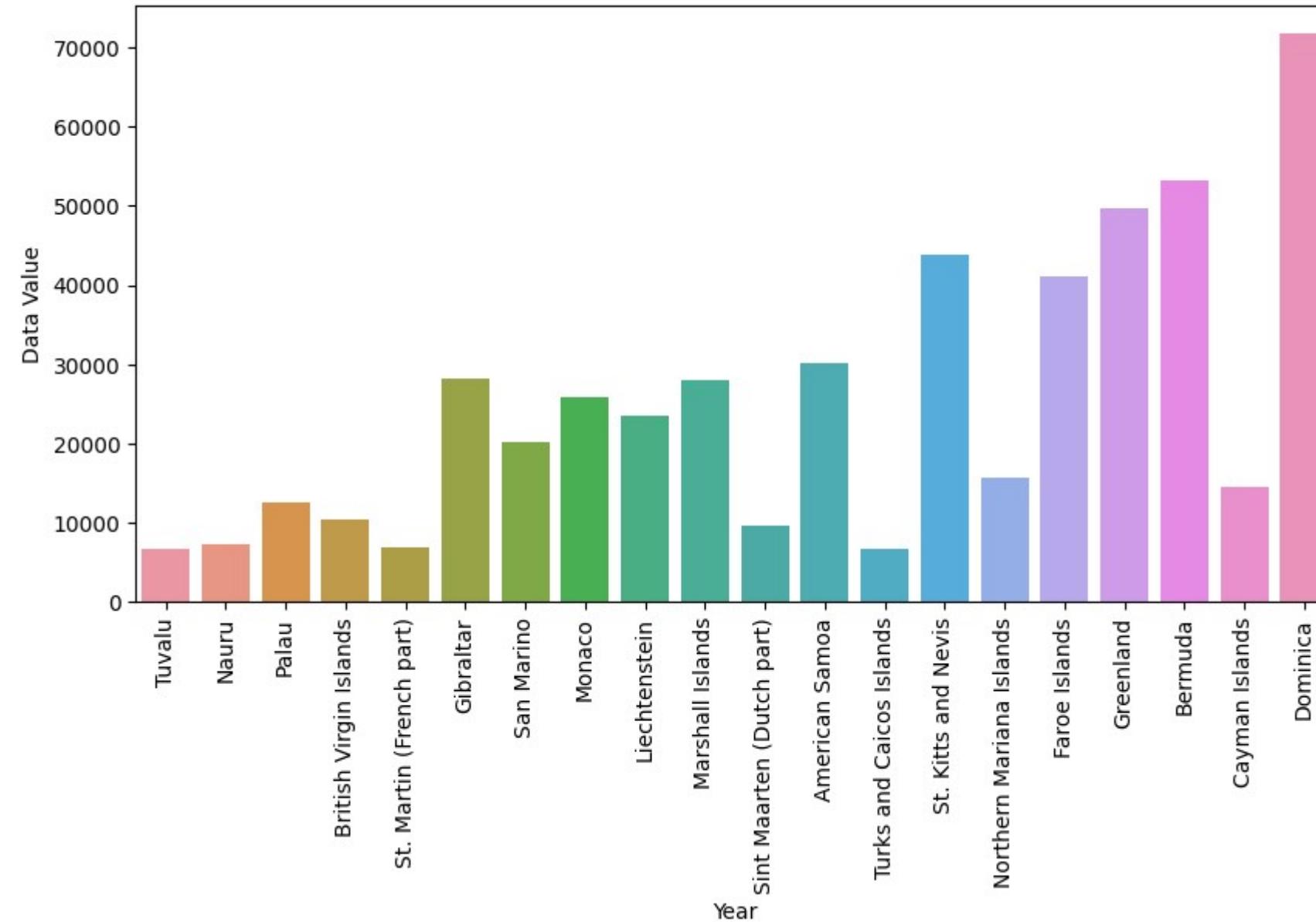
1974 - Data Values from 1960 to 2022



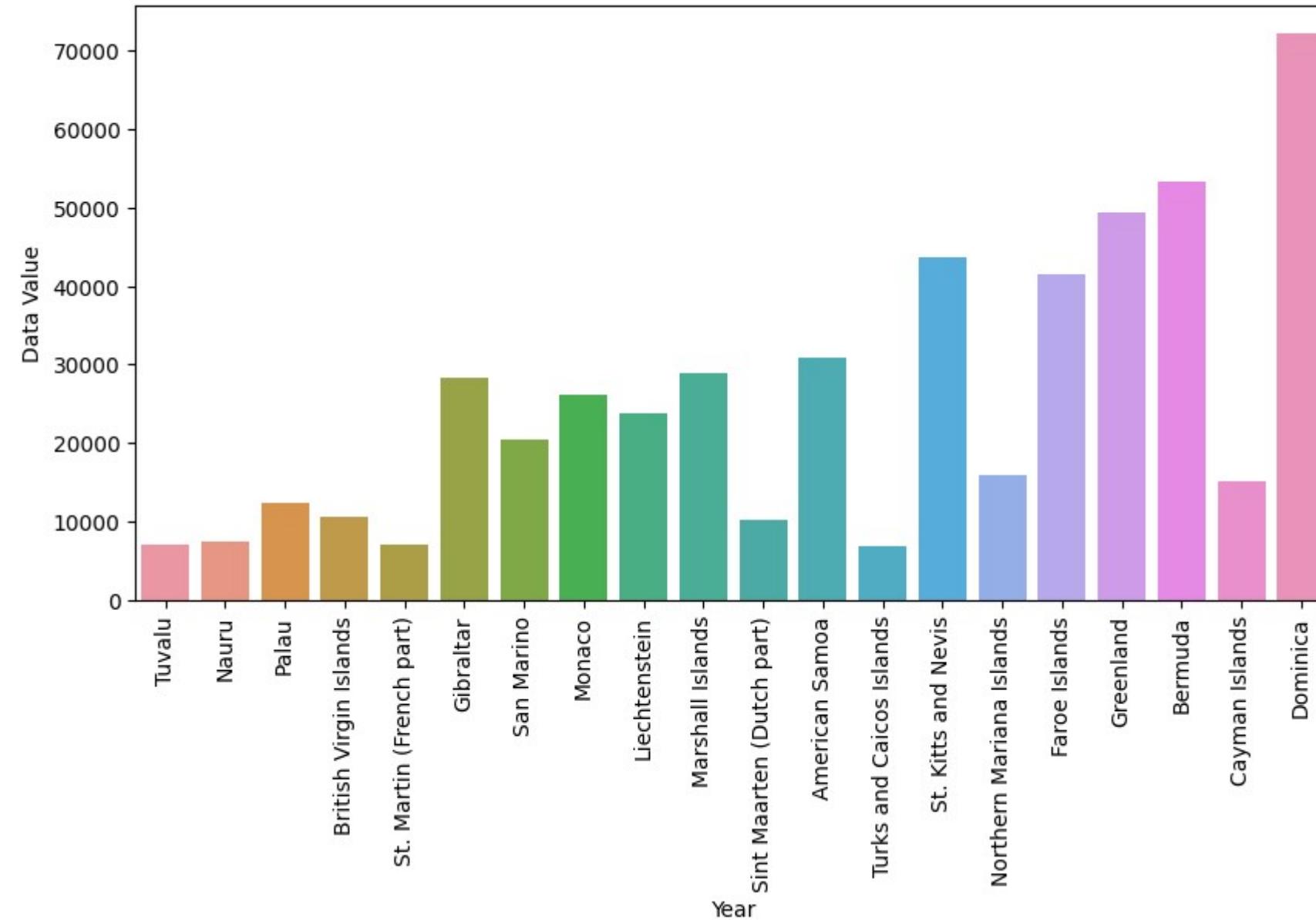
1975 - Data Values from 1960 to 2022



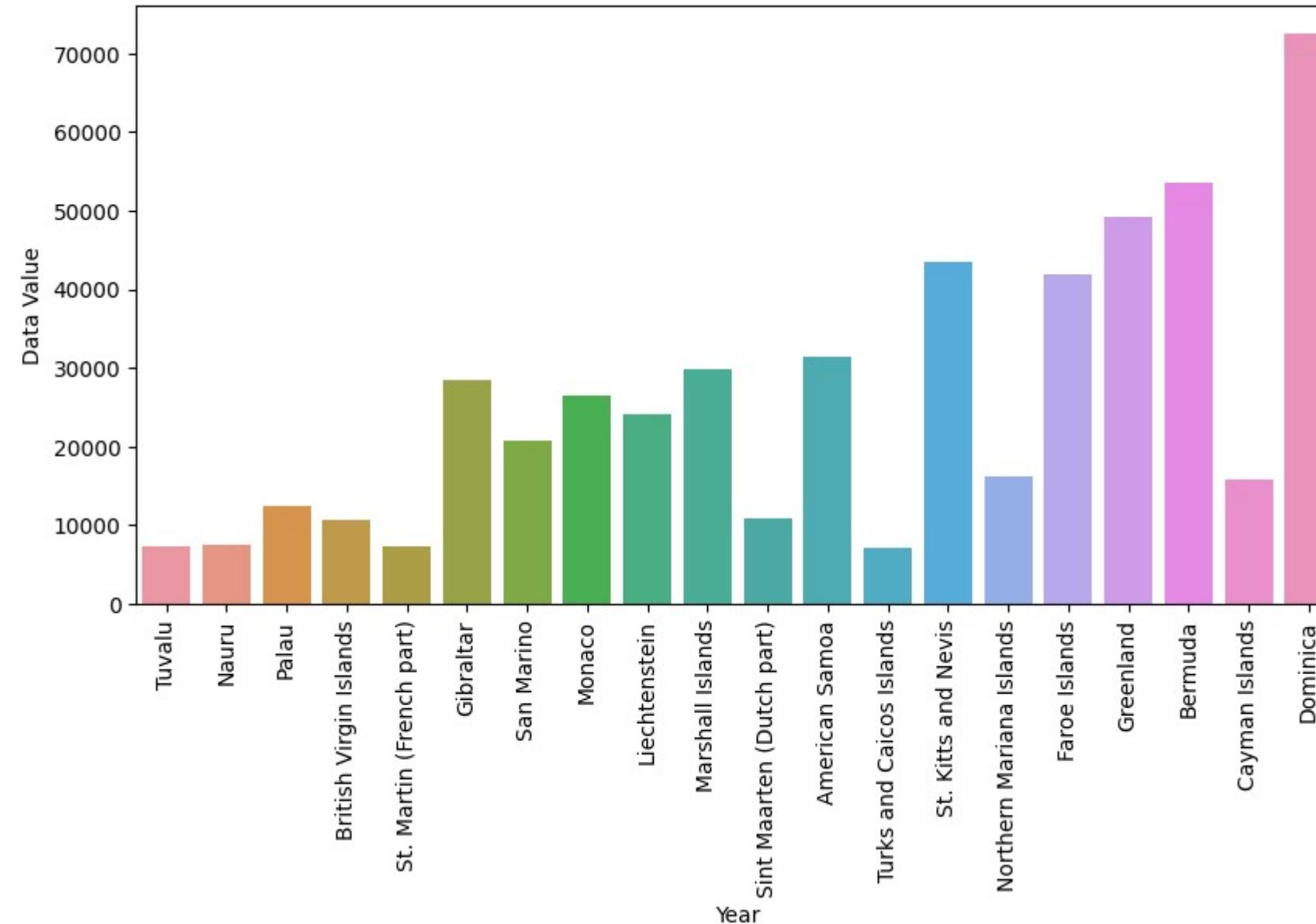
1976 - Data Values from 1960 to 2022



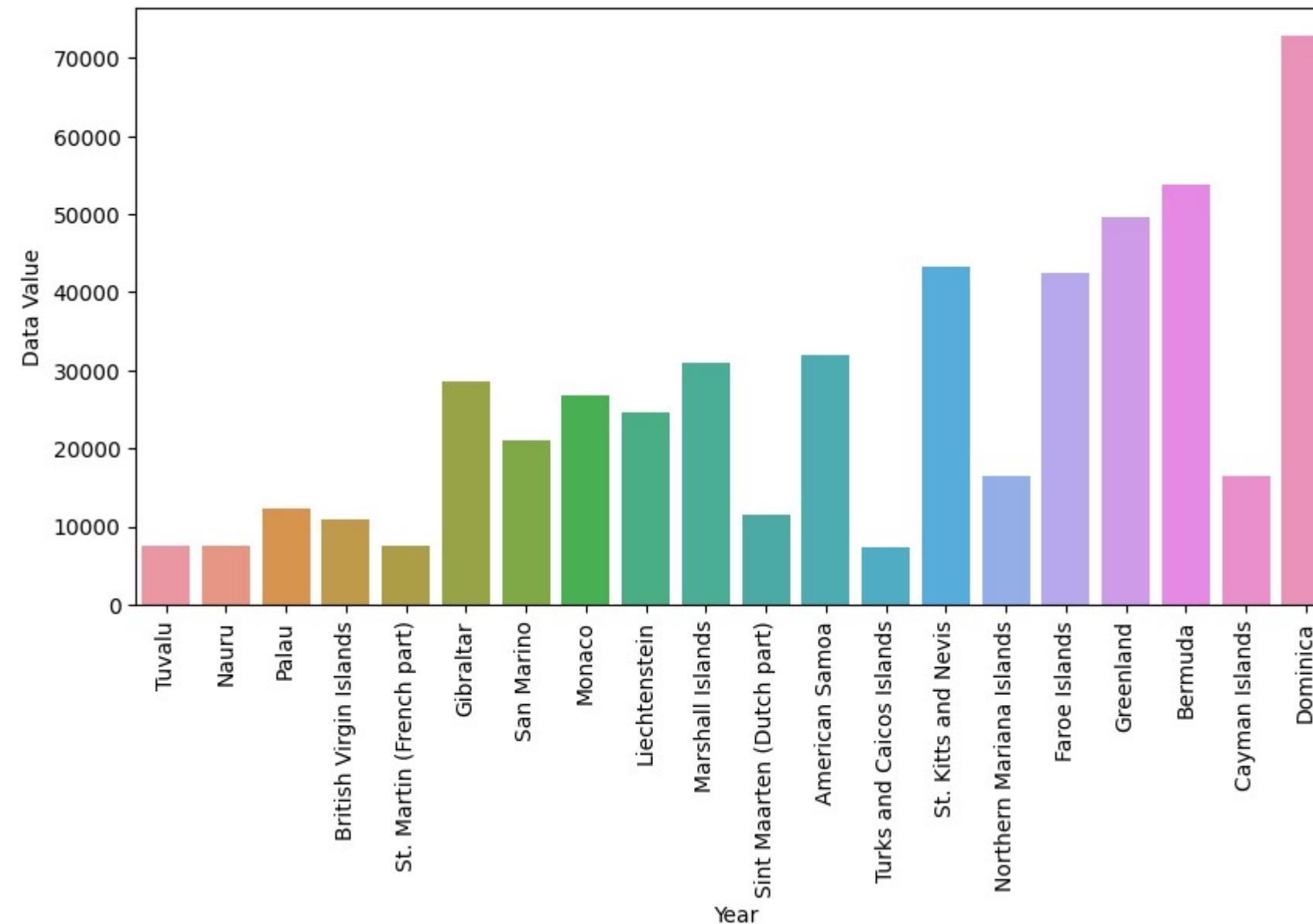
1977 - Data Values from 1960 to 2022



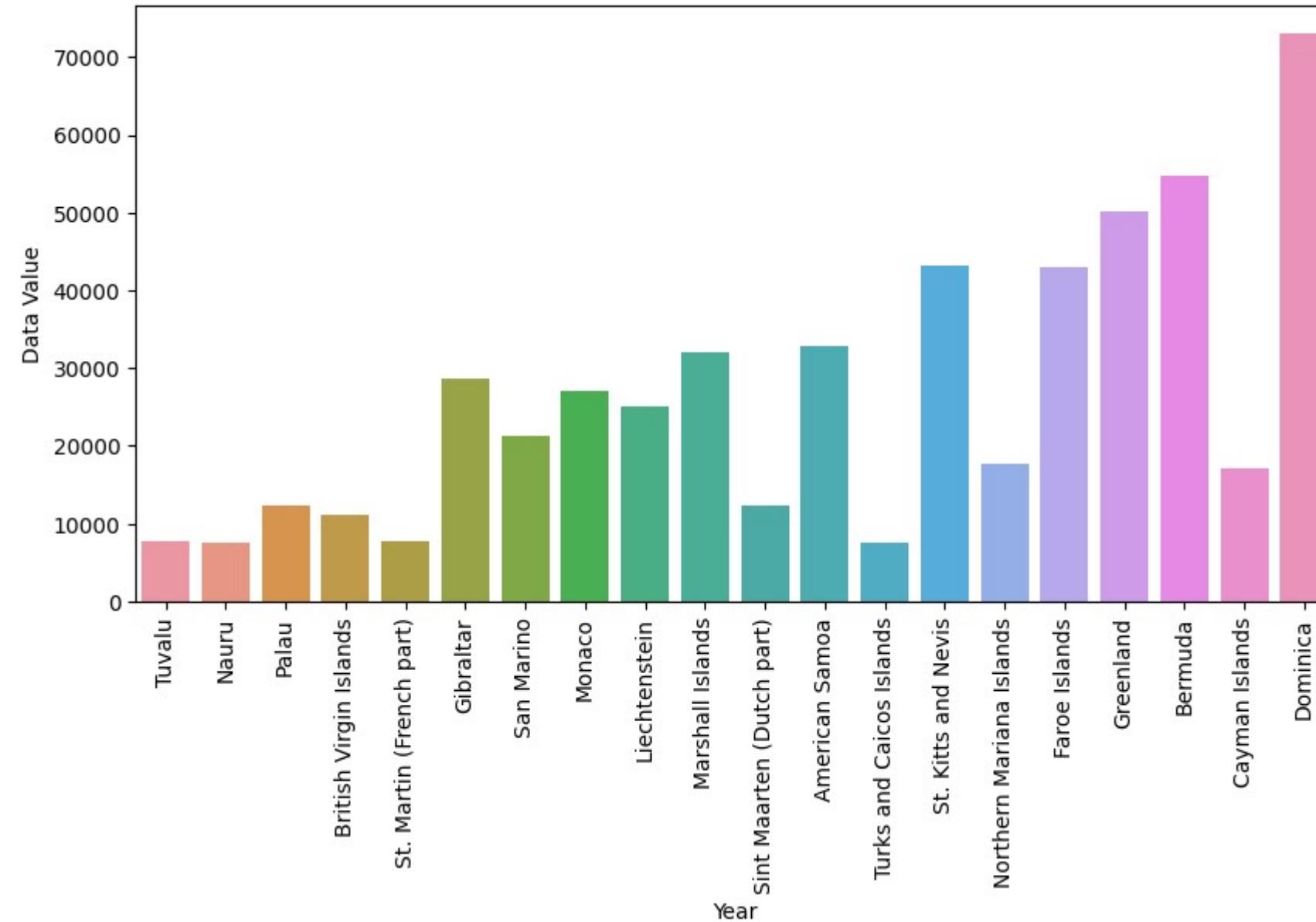
1978 - Data Values from 1960 to 2022



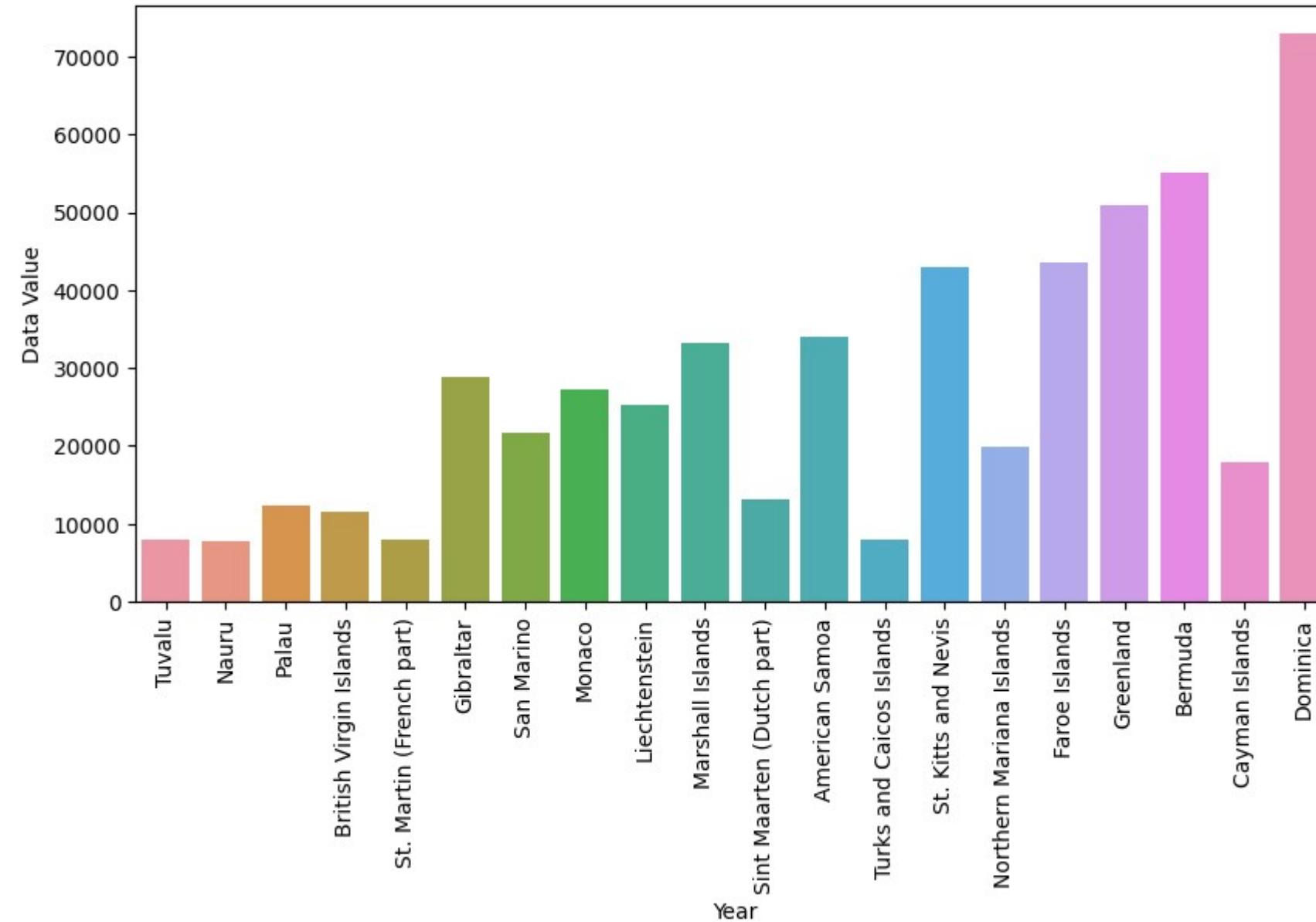
1979 - Data Values from 1960 to 2022



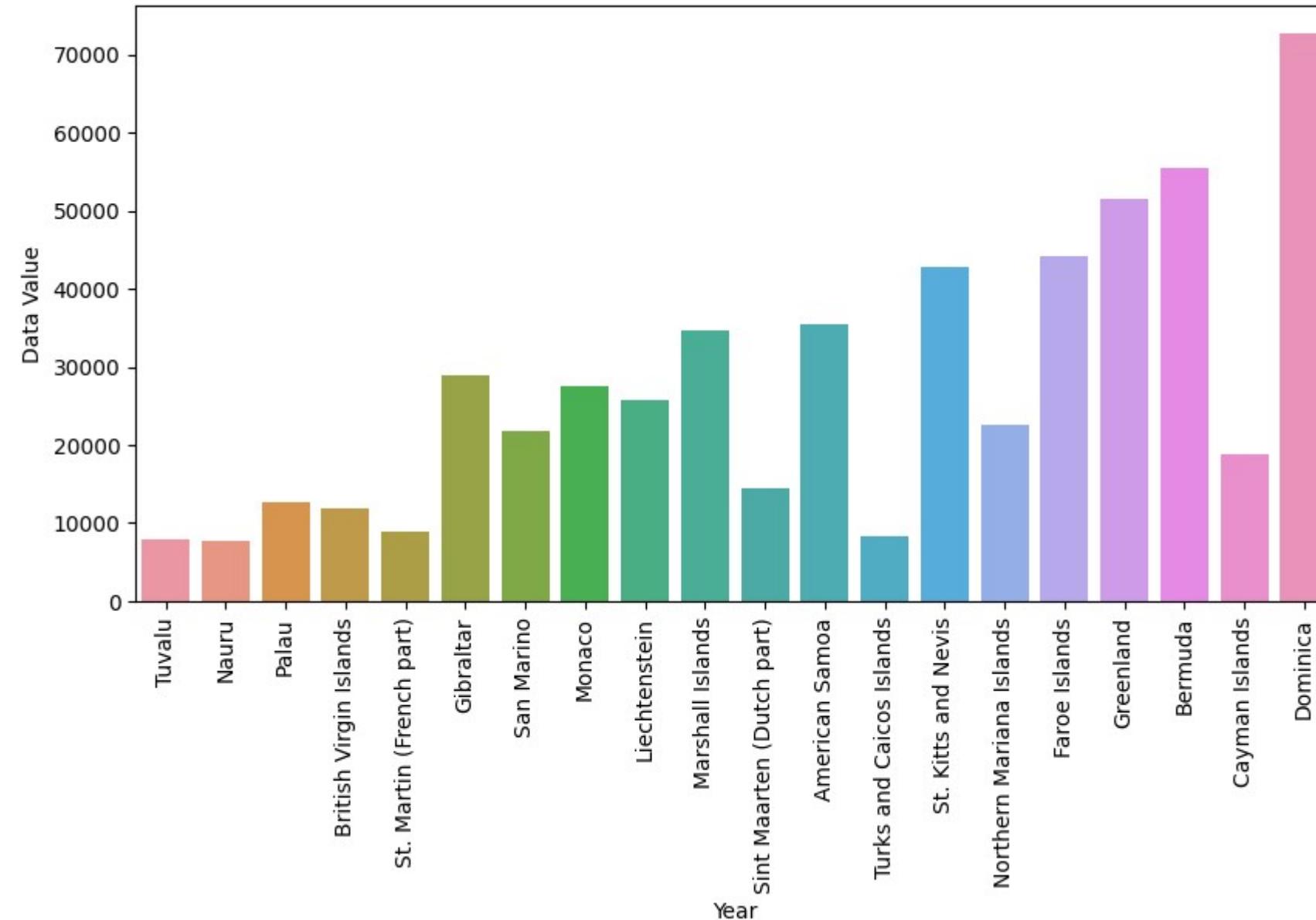
1980 - Data Values from 1960 to 2022



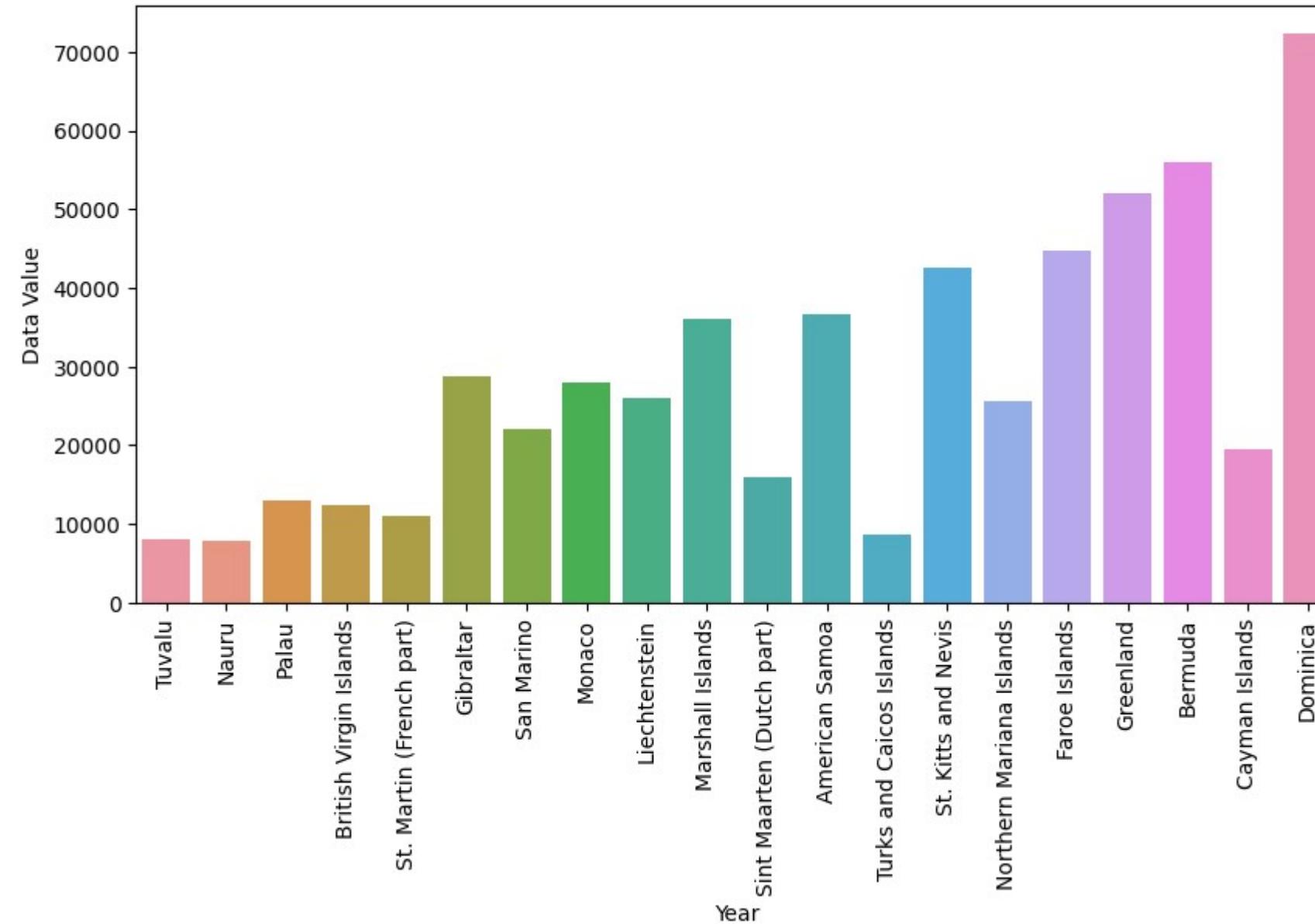
1981 - Data Values from 1960 to 2022



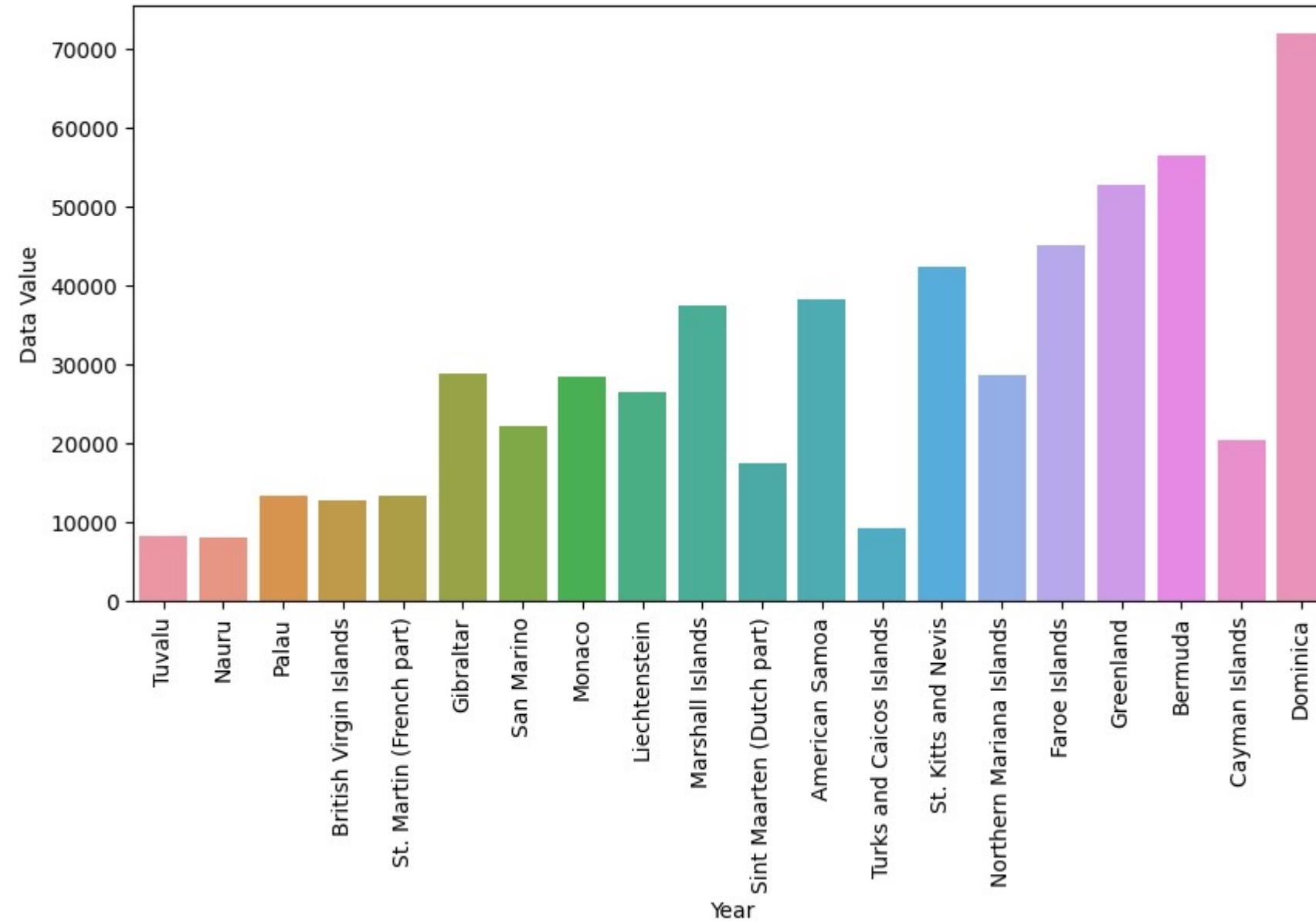
1982 - Data Values from 1960 to 2022



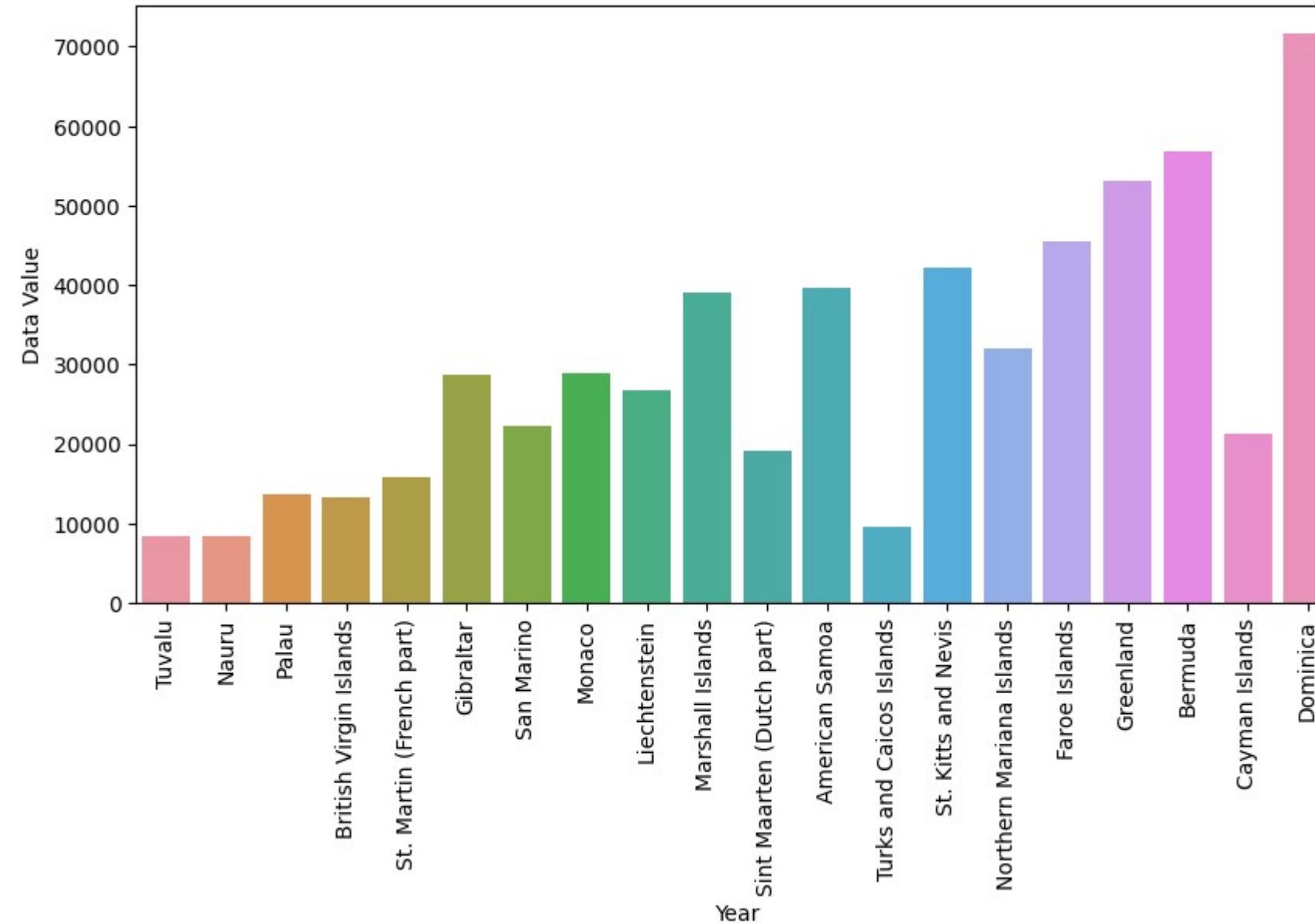
1983 - Data Values from 1960 to 2022



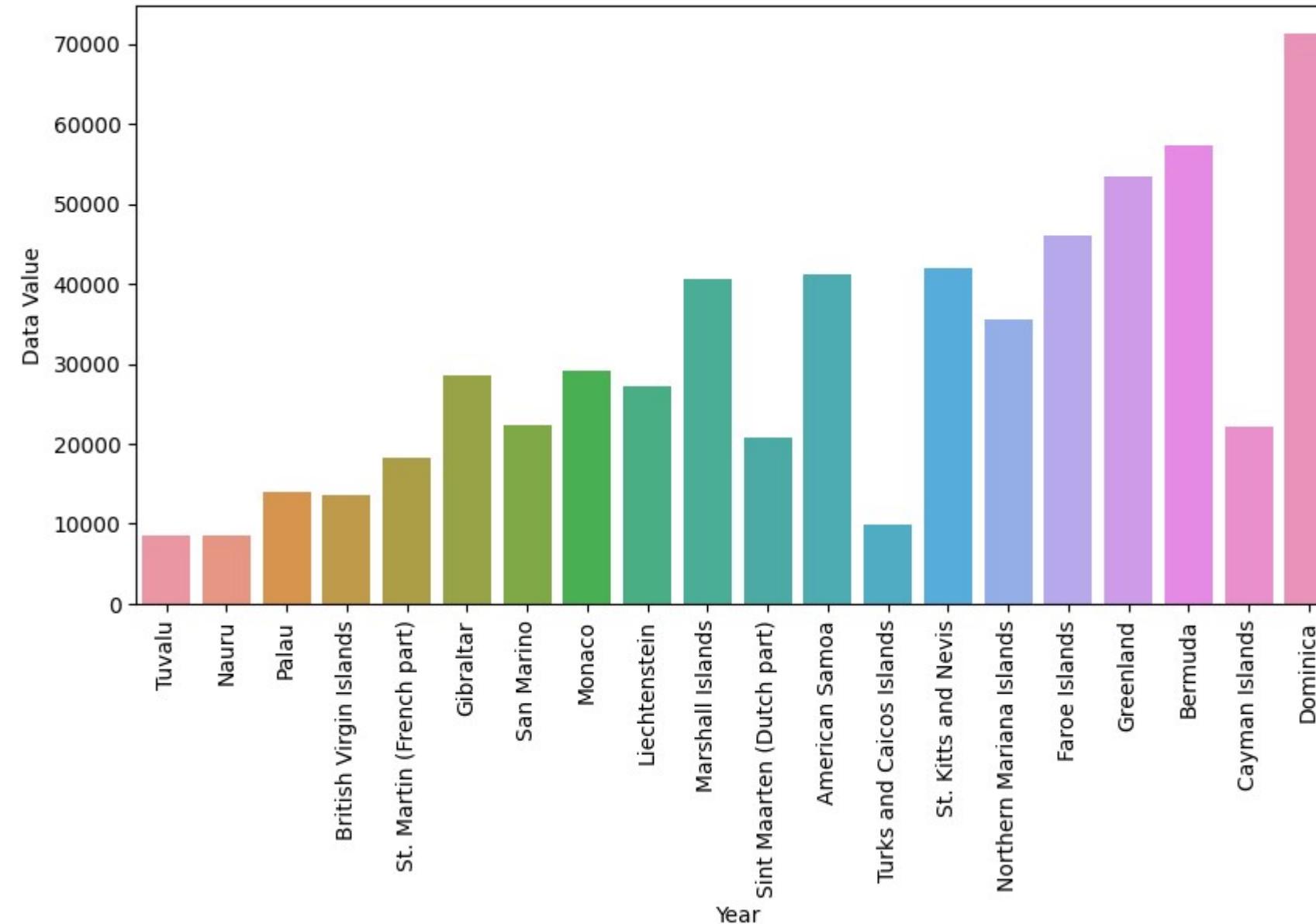
1984 - Data Values from 1960 to 2022



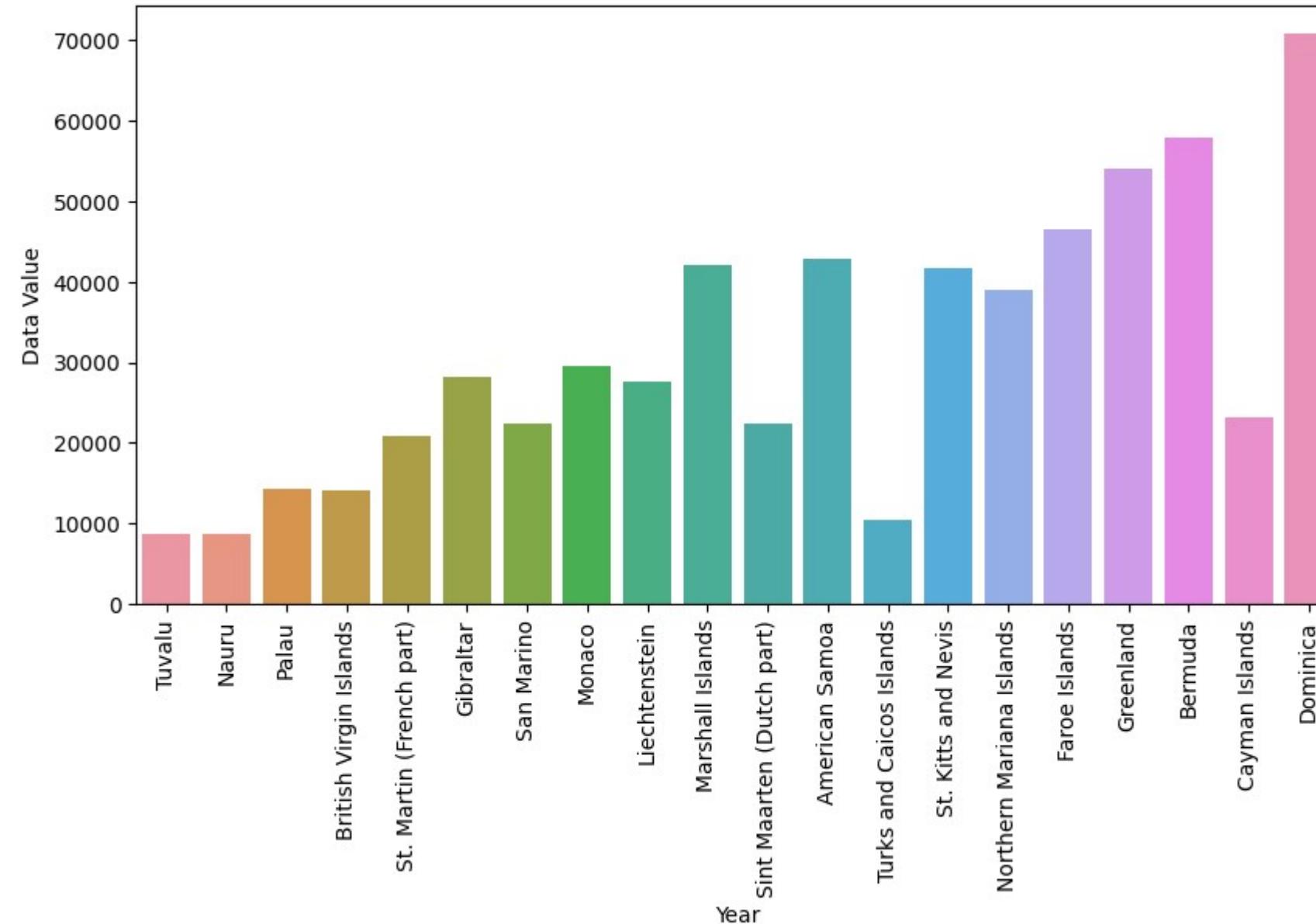
1985 - Data Values from 1960 to 2022



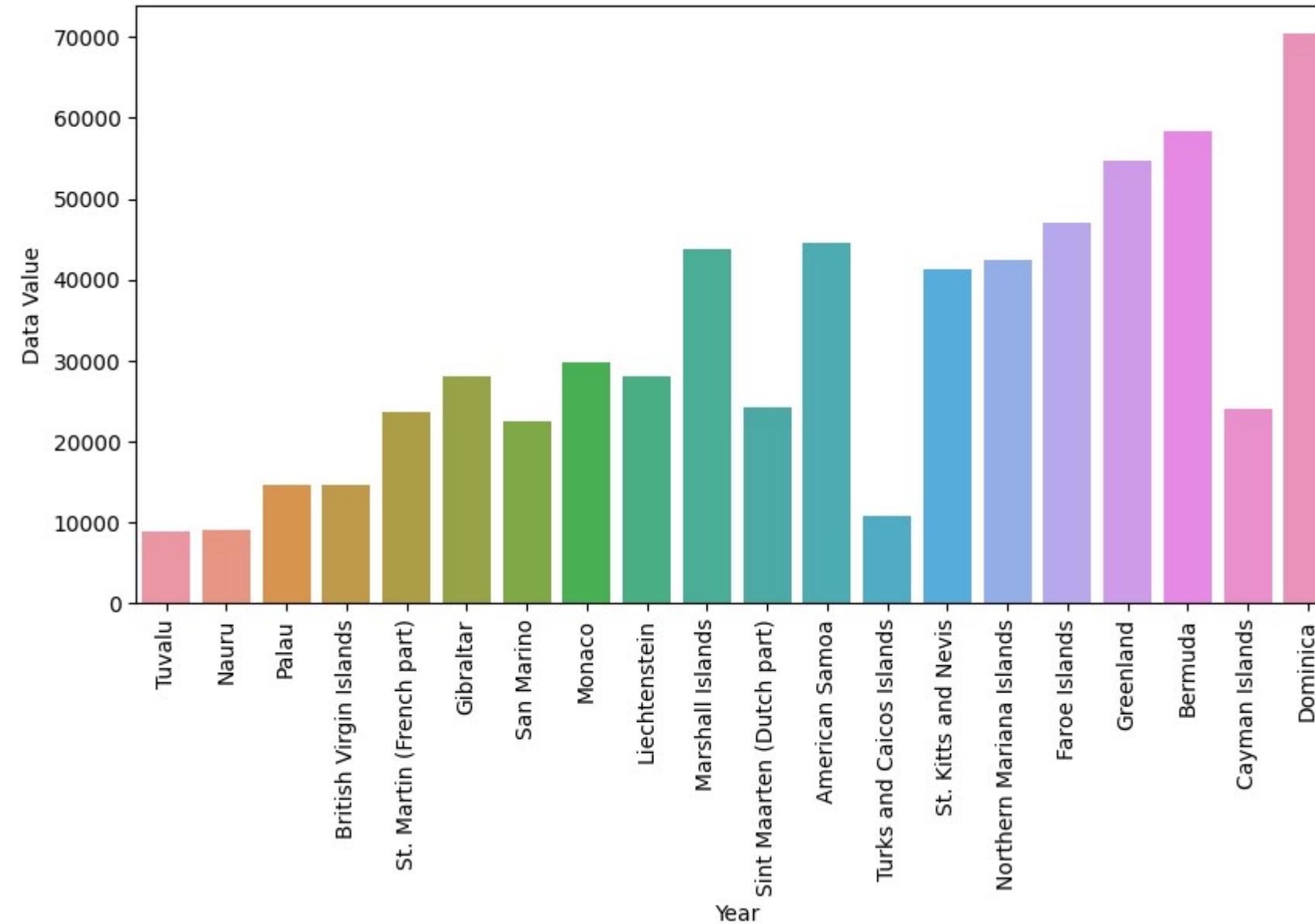
1986 - Data Values from 1960 to 2022



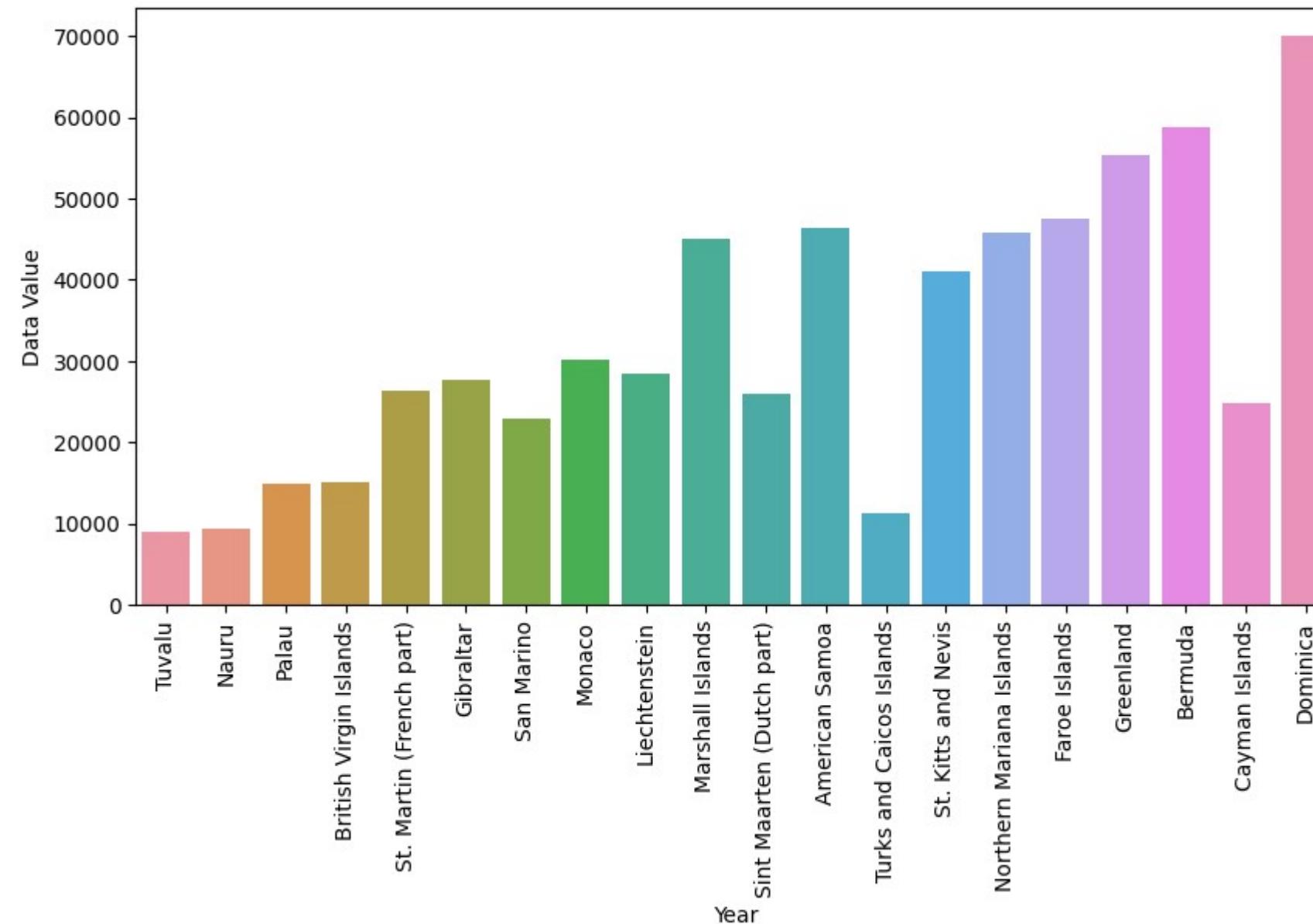
1987 - Data Values from 1960 to 2022



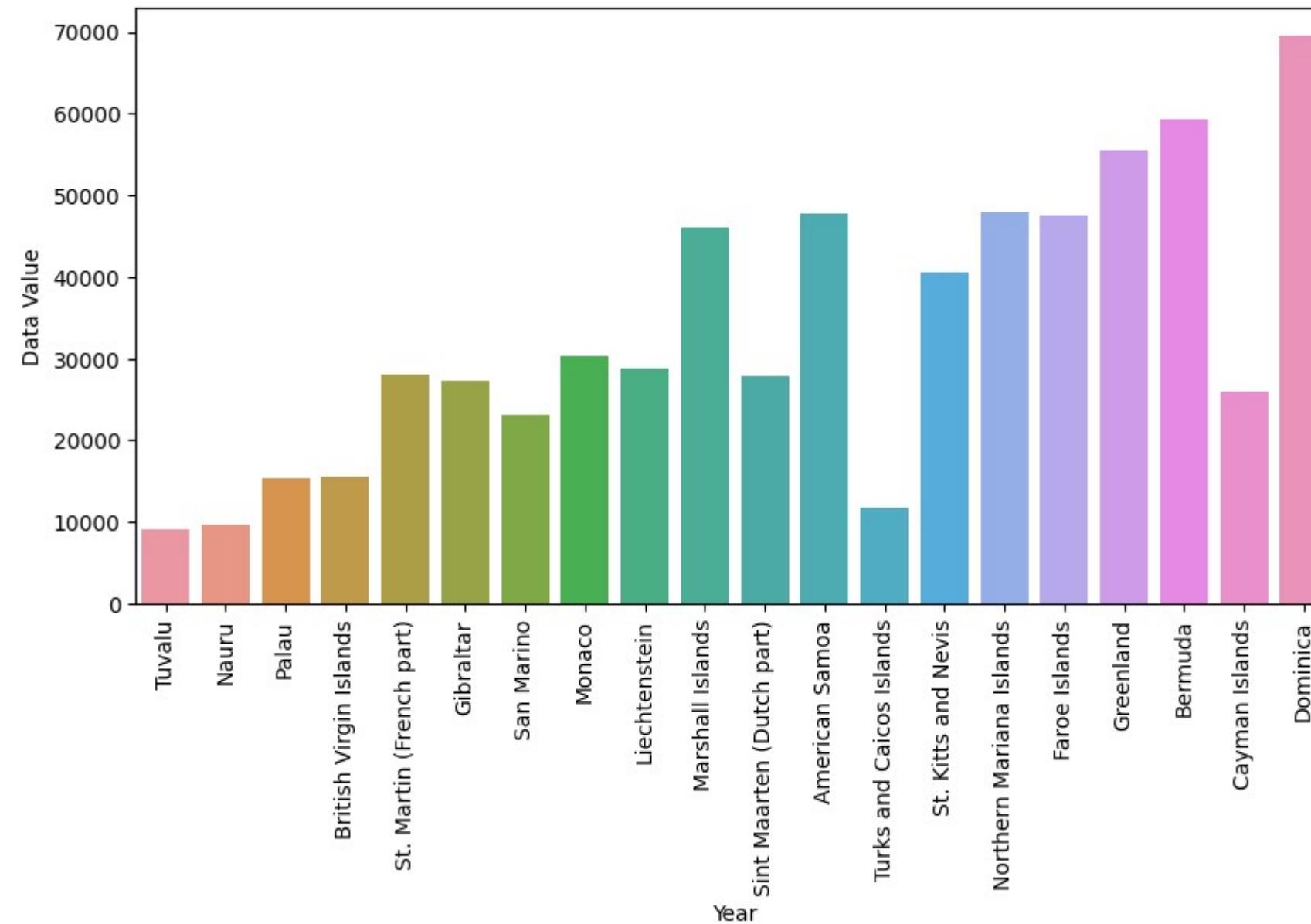
1988 - Data Values from 1960 to 2022



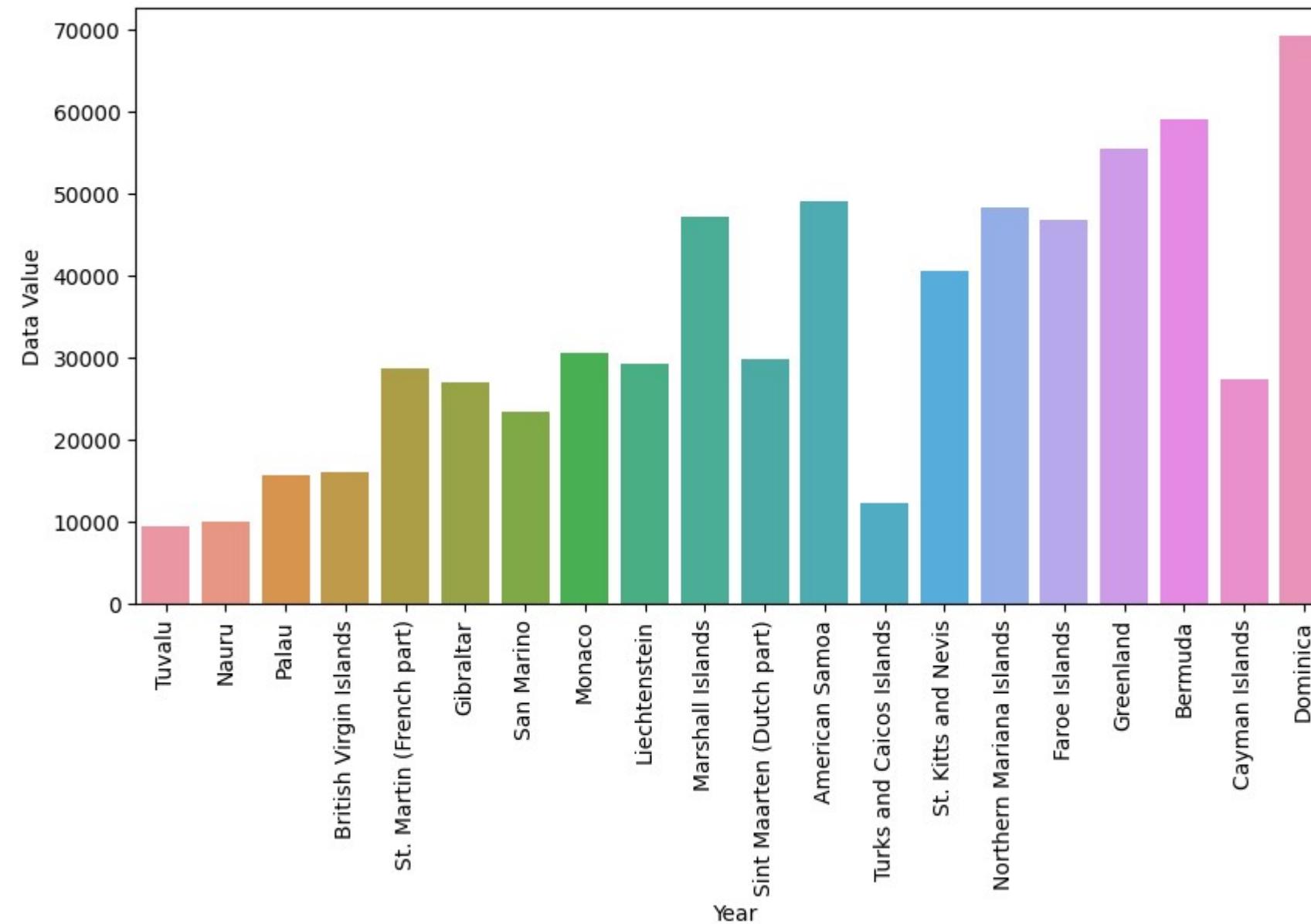
1989 - Data Values from 1960 to 2022



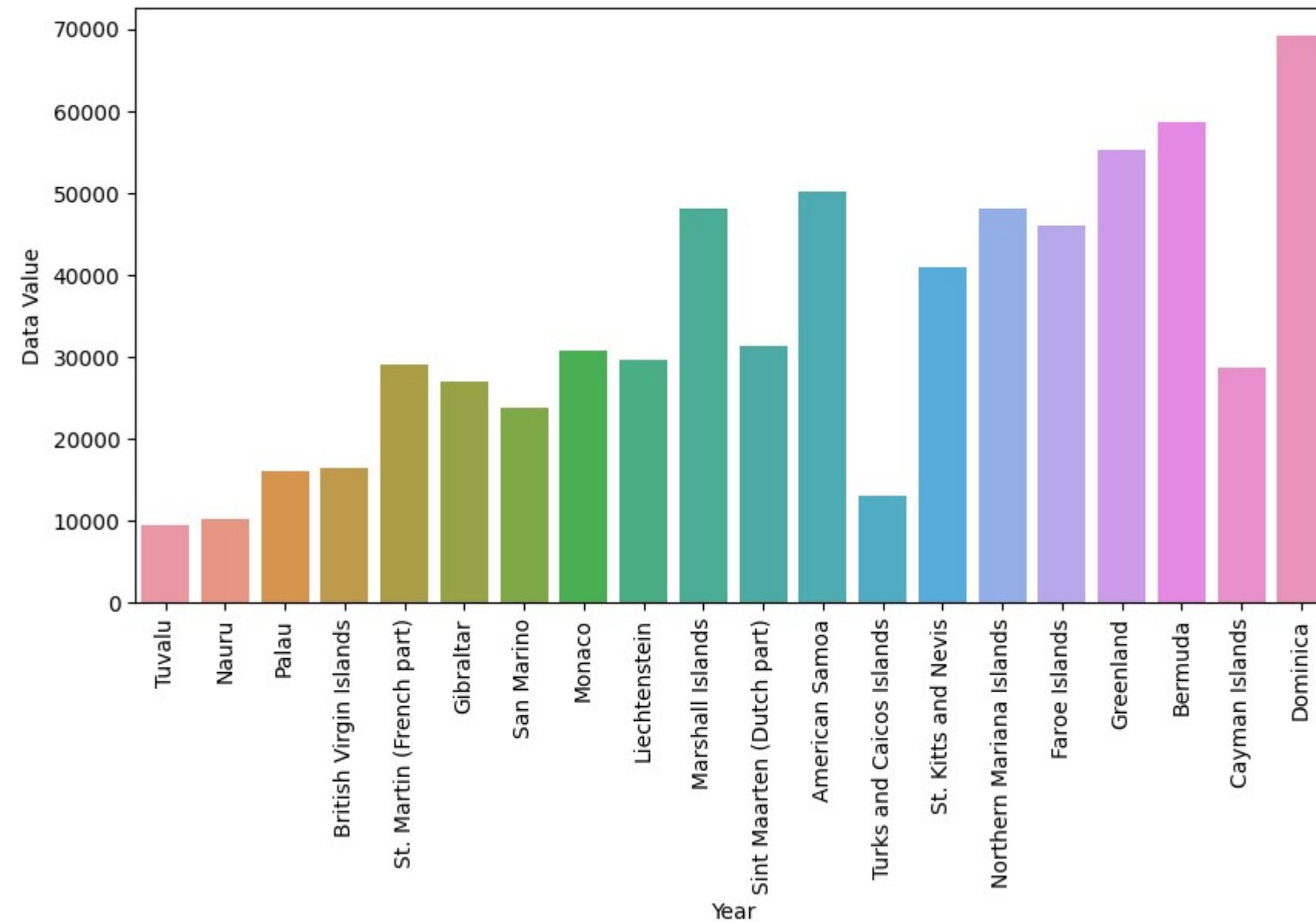
1990 - Data Values from 1960 to 2022



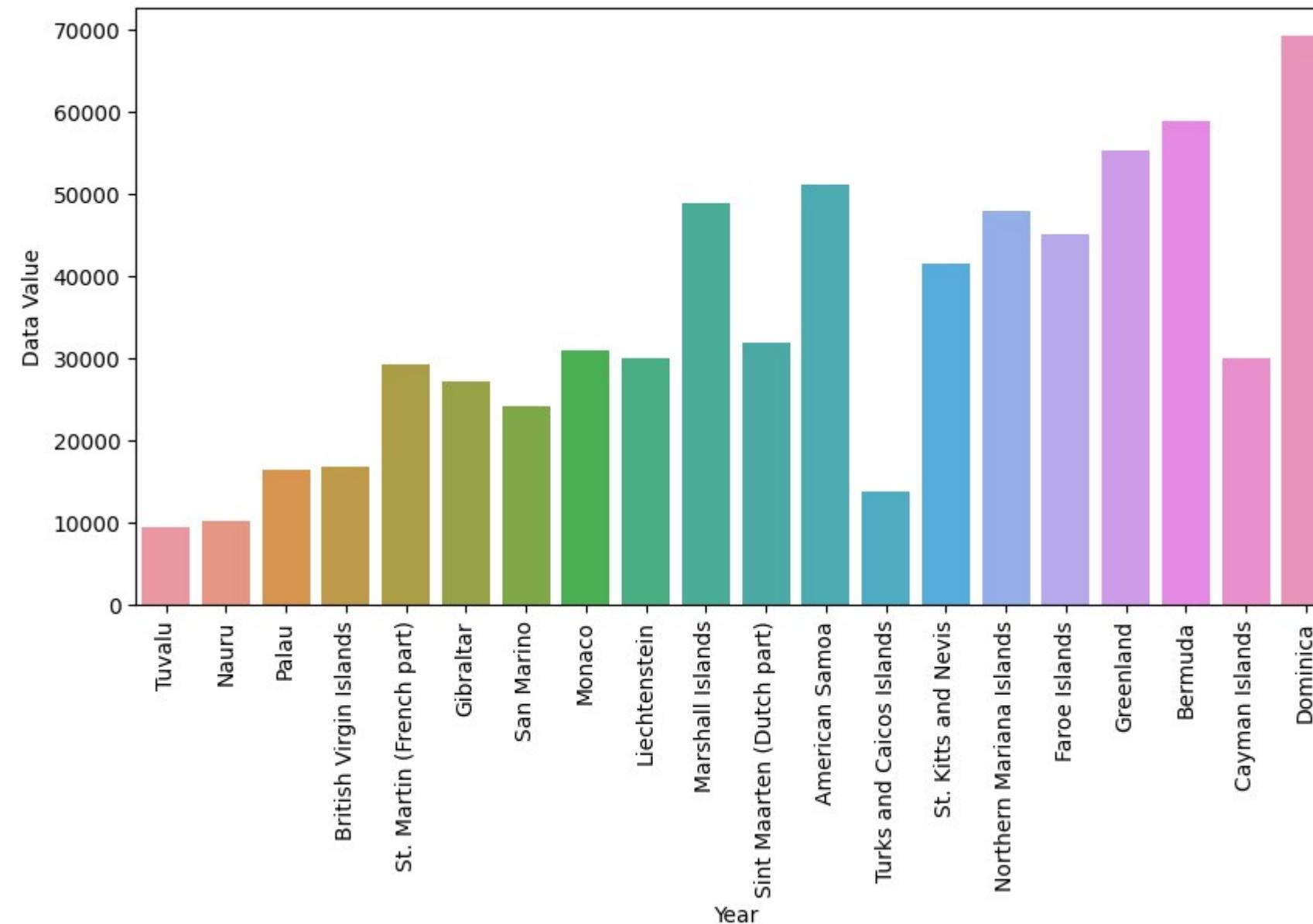
1991 - Data Values from 1960 to 2022

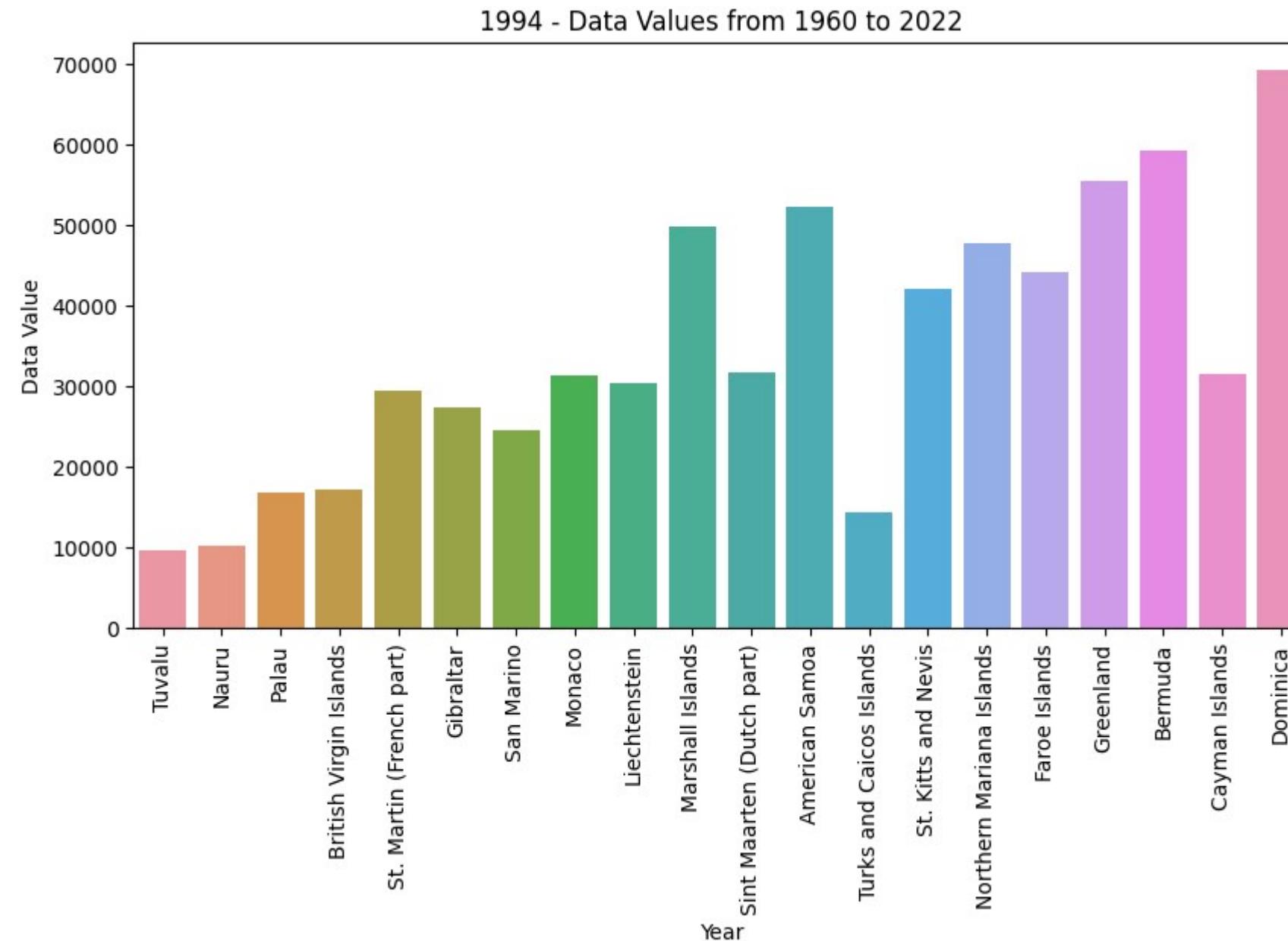


1992 - Data Values from 1960 to 2022

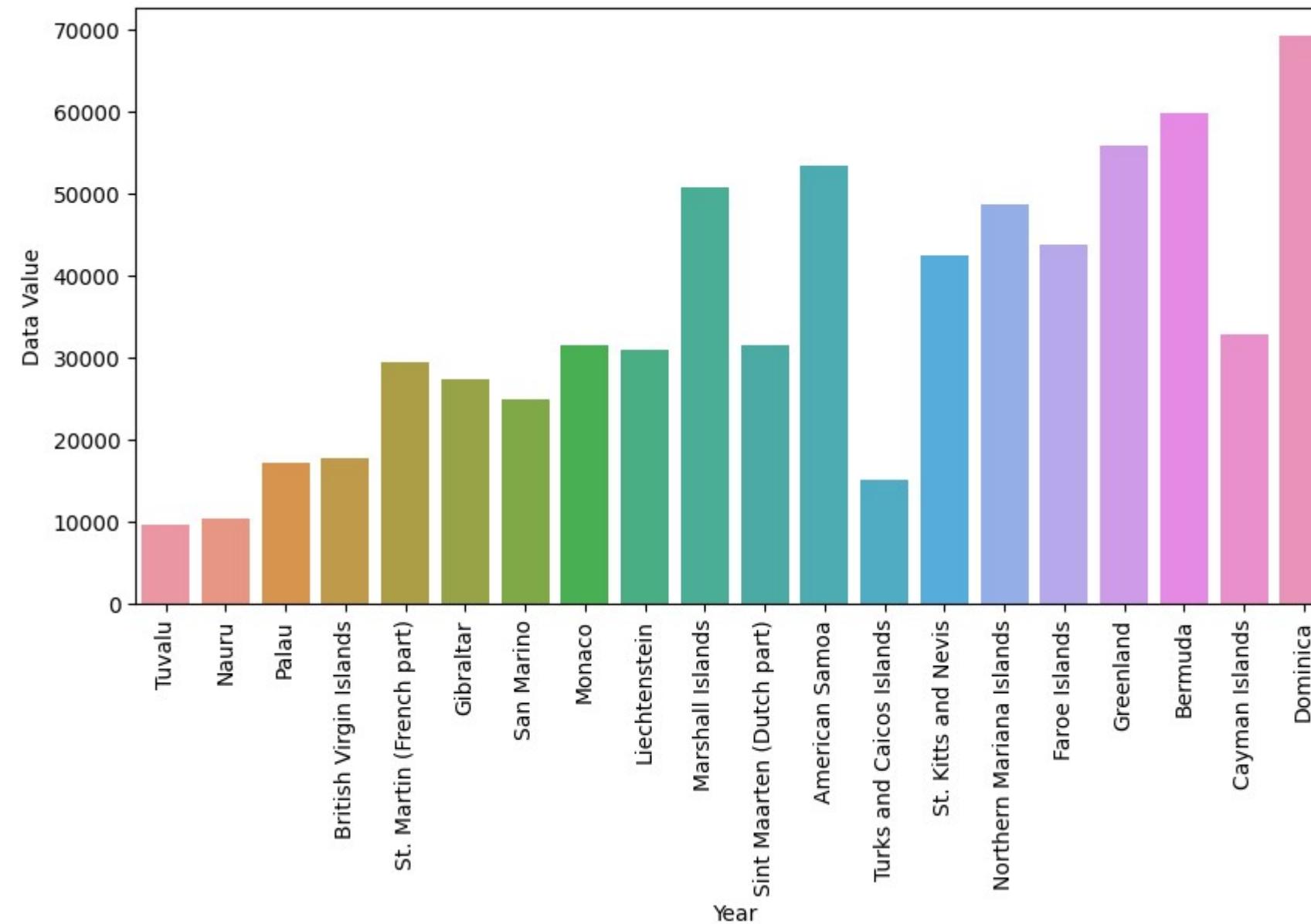


1993 - Data Values from 1960 to 2022

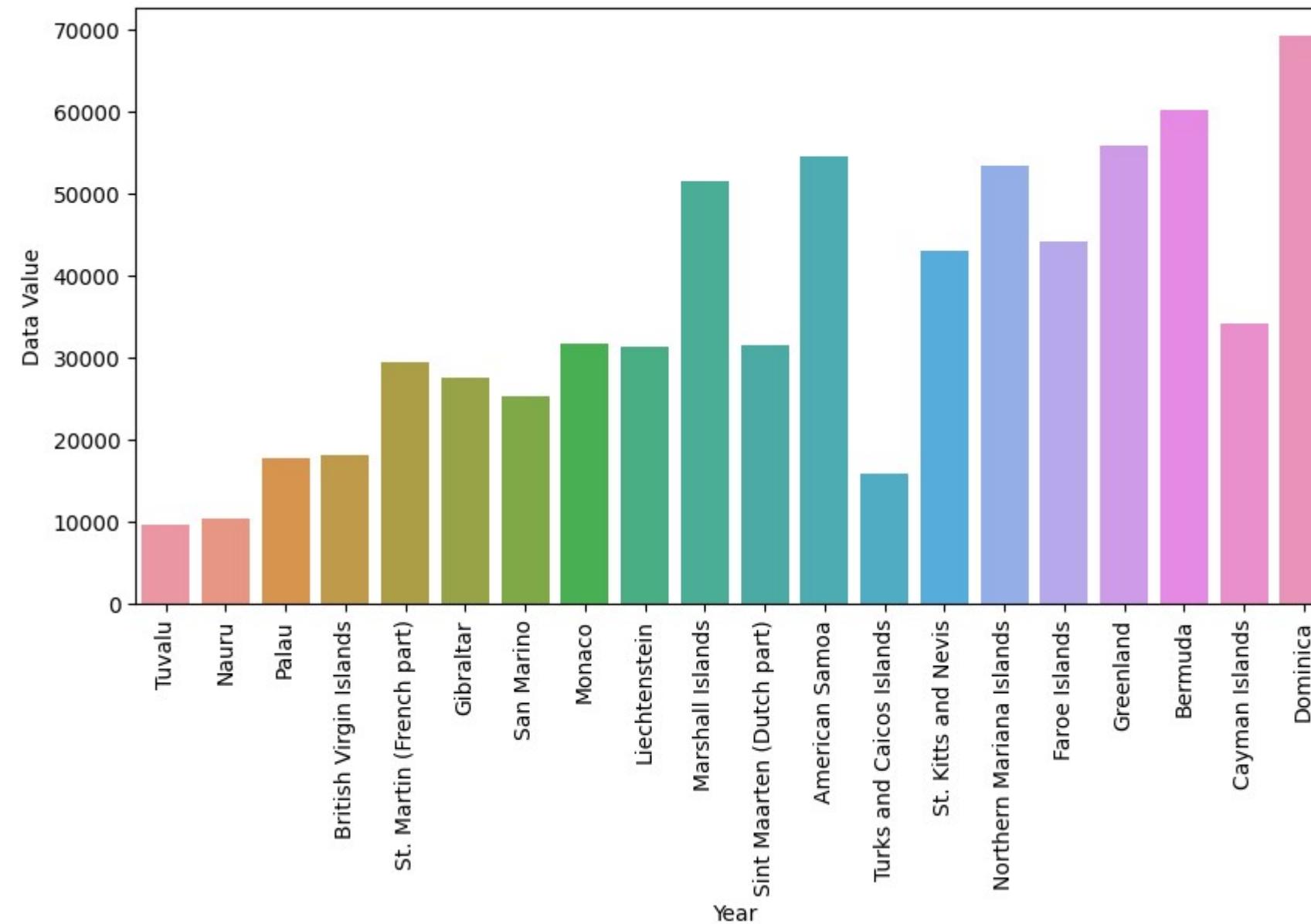


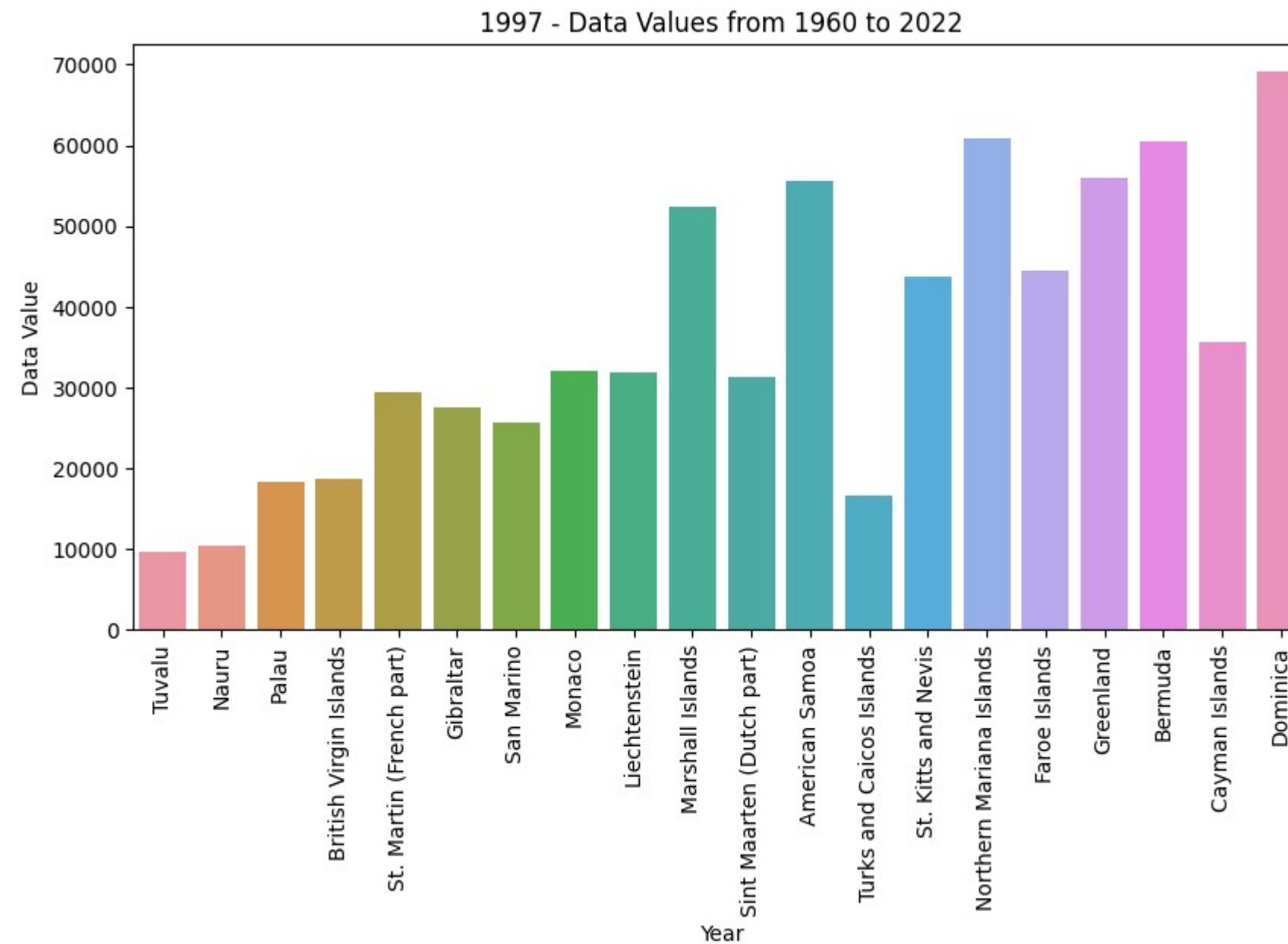


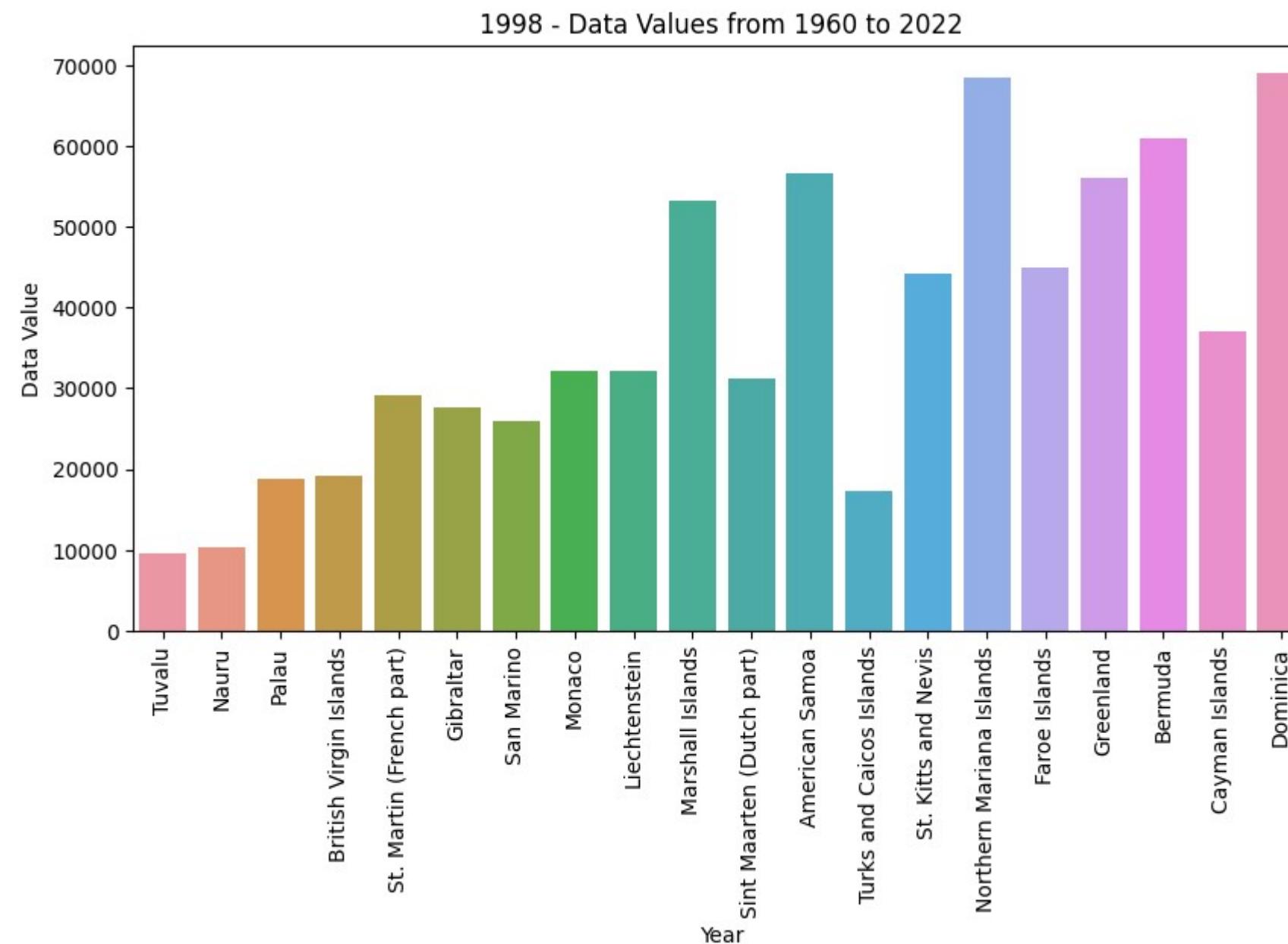
1995 - Data Values from 1960 to 2022

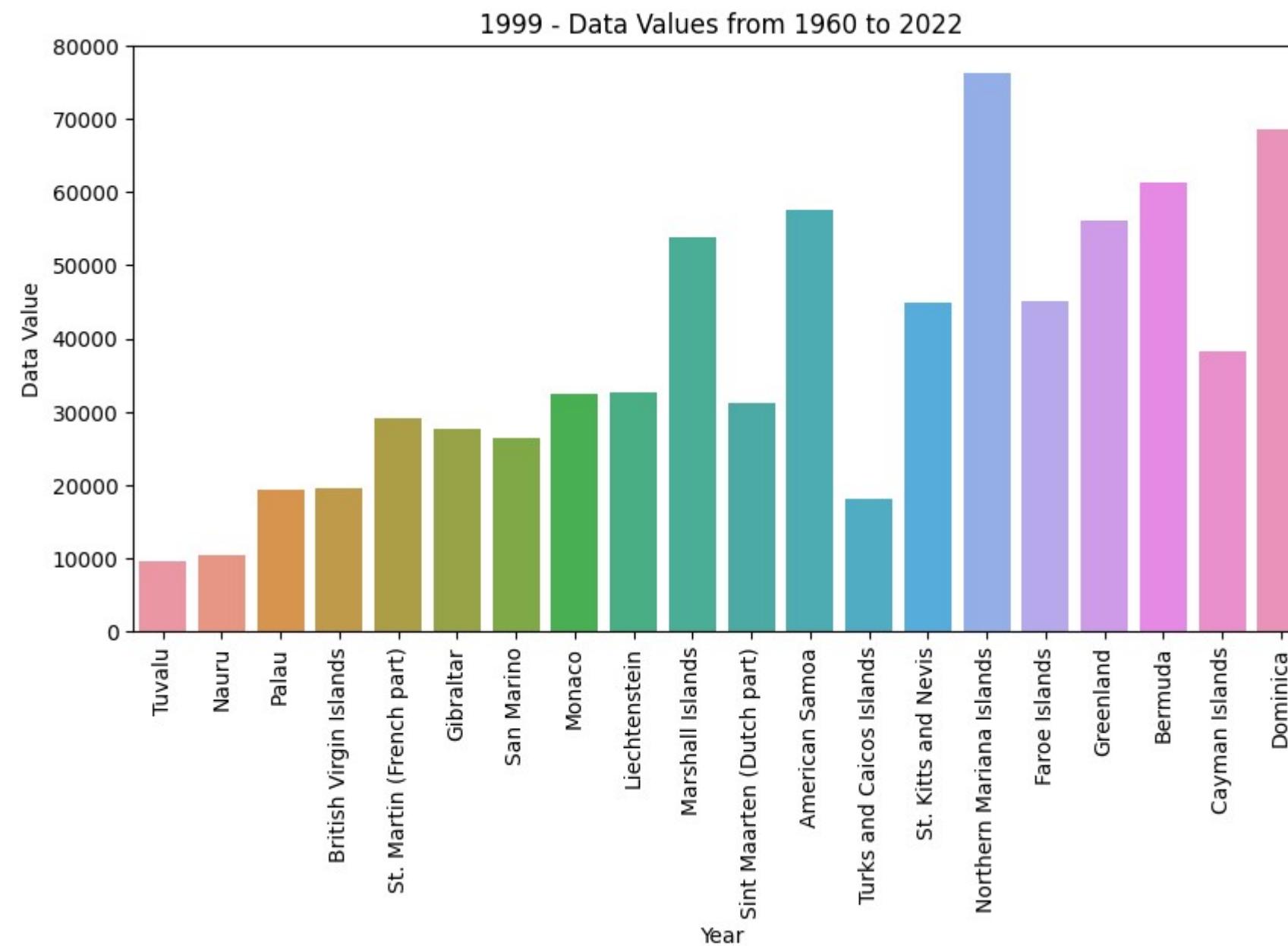


1996 - Data Values from 1960 to 2022

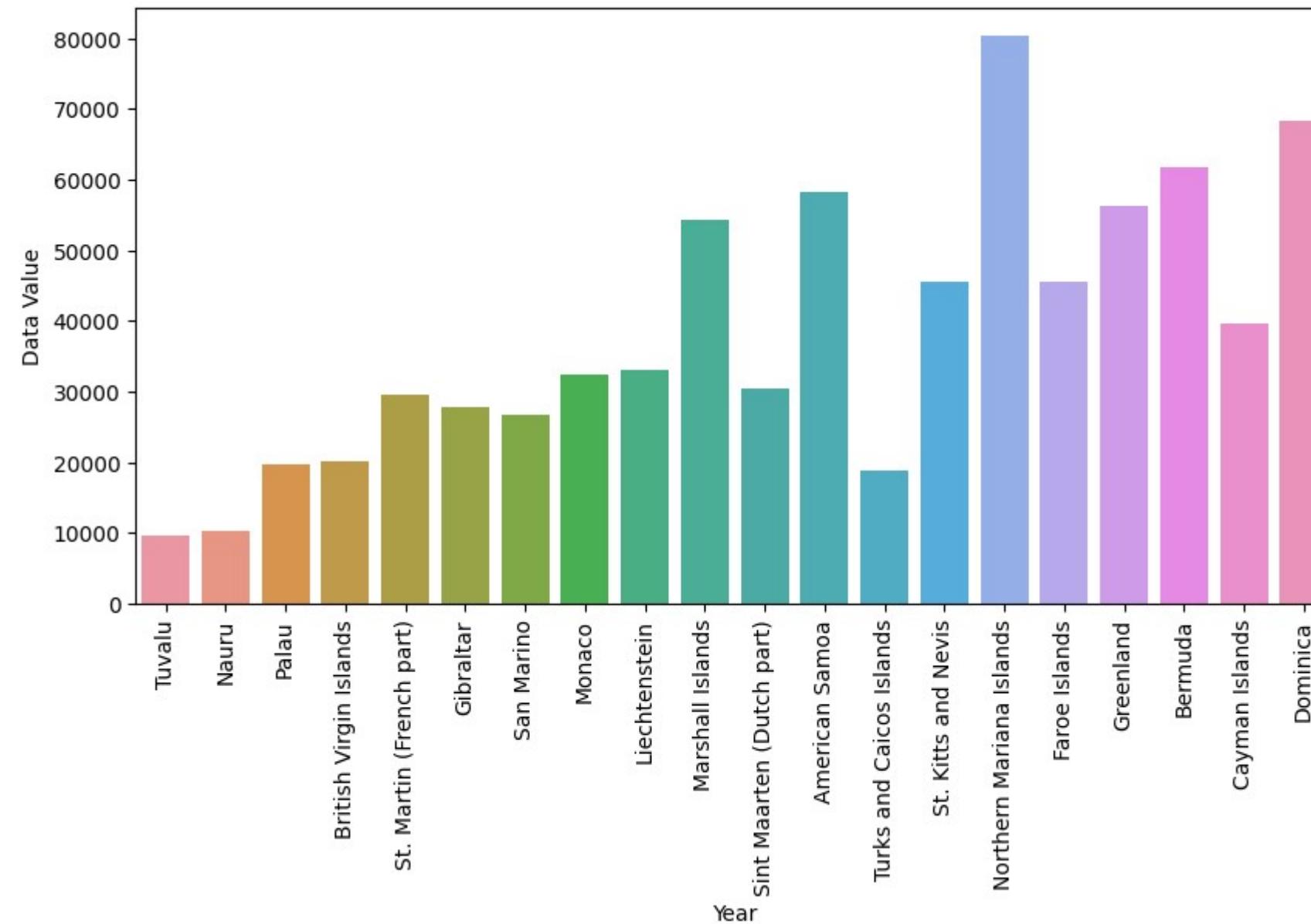




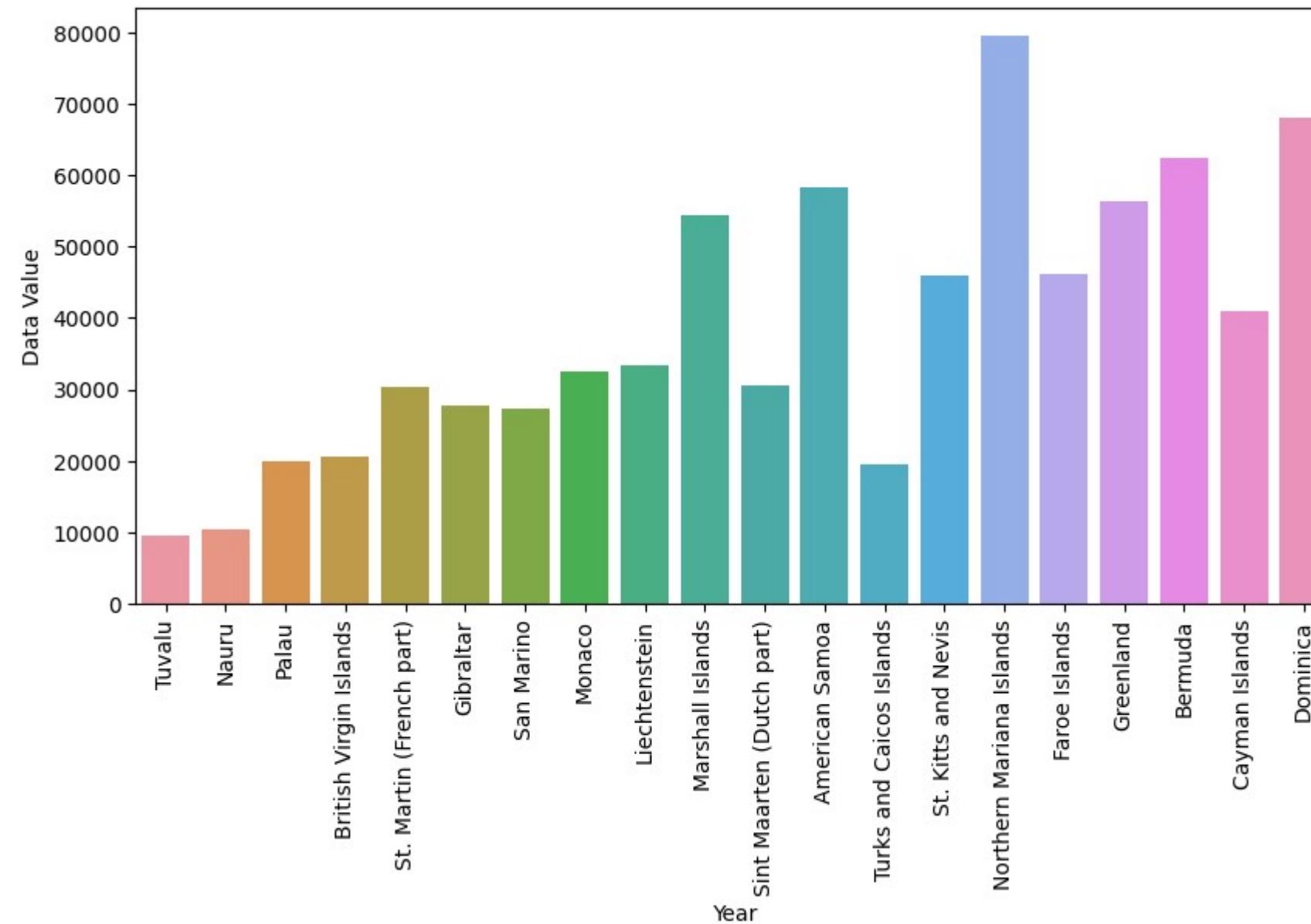




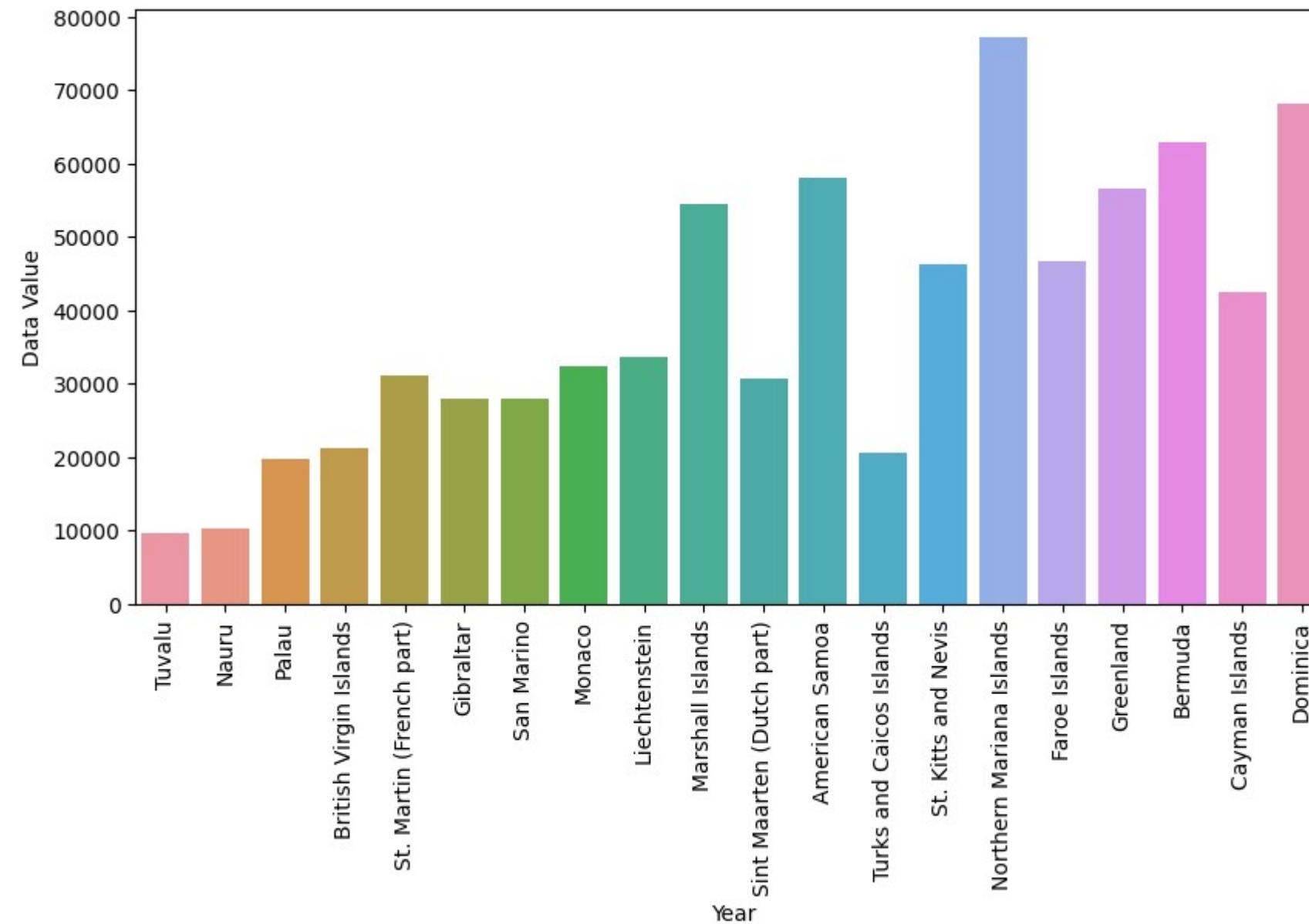
2000 - Data Values from 1960 to 2022



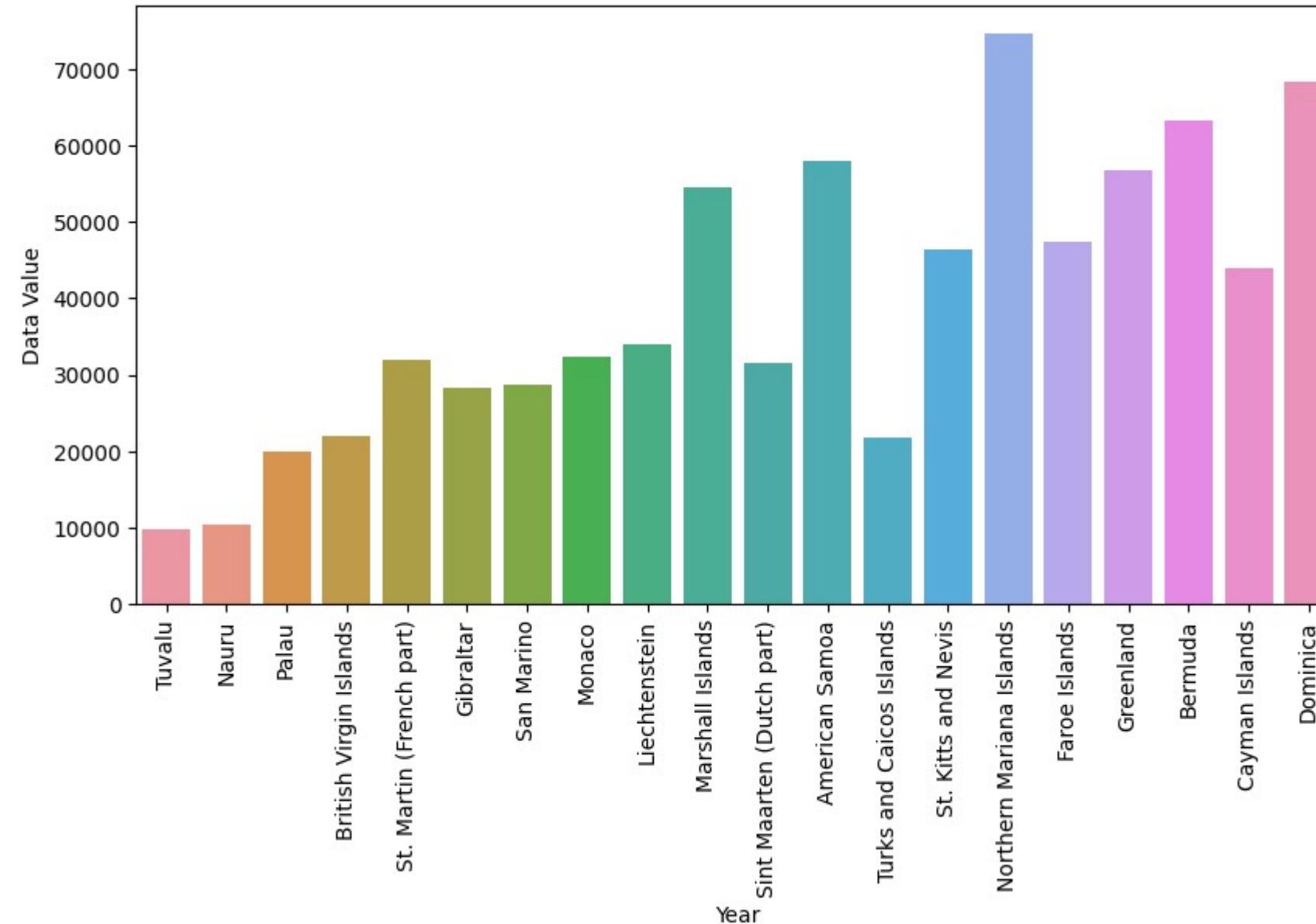
2001 - Data Values from 1960 to 2022



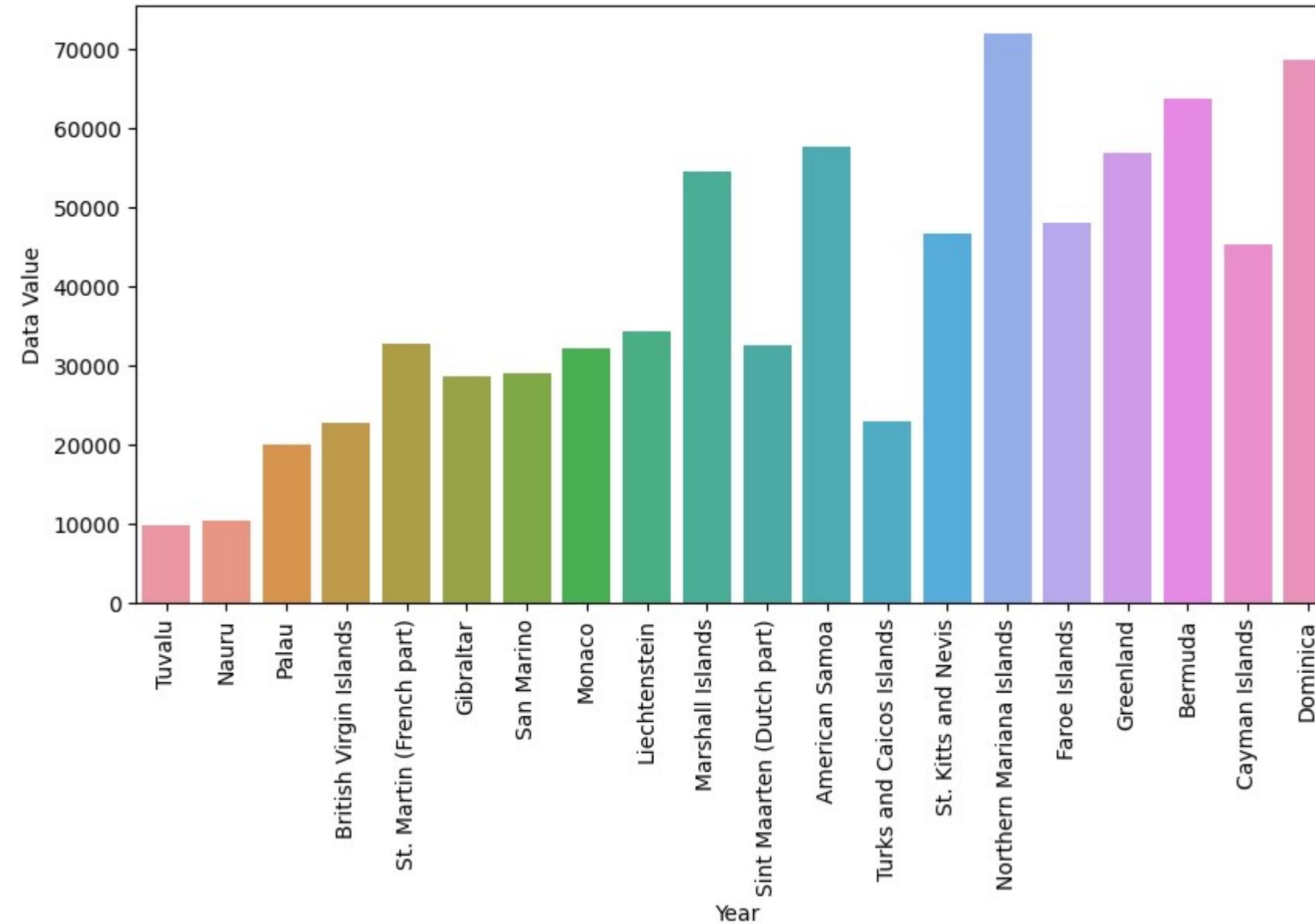
2002 - Data Values from 1960 to 2022

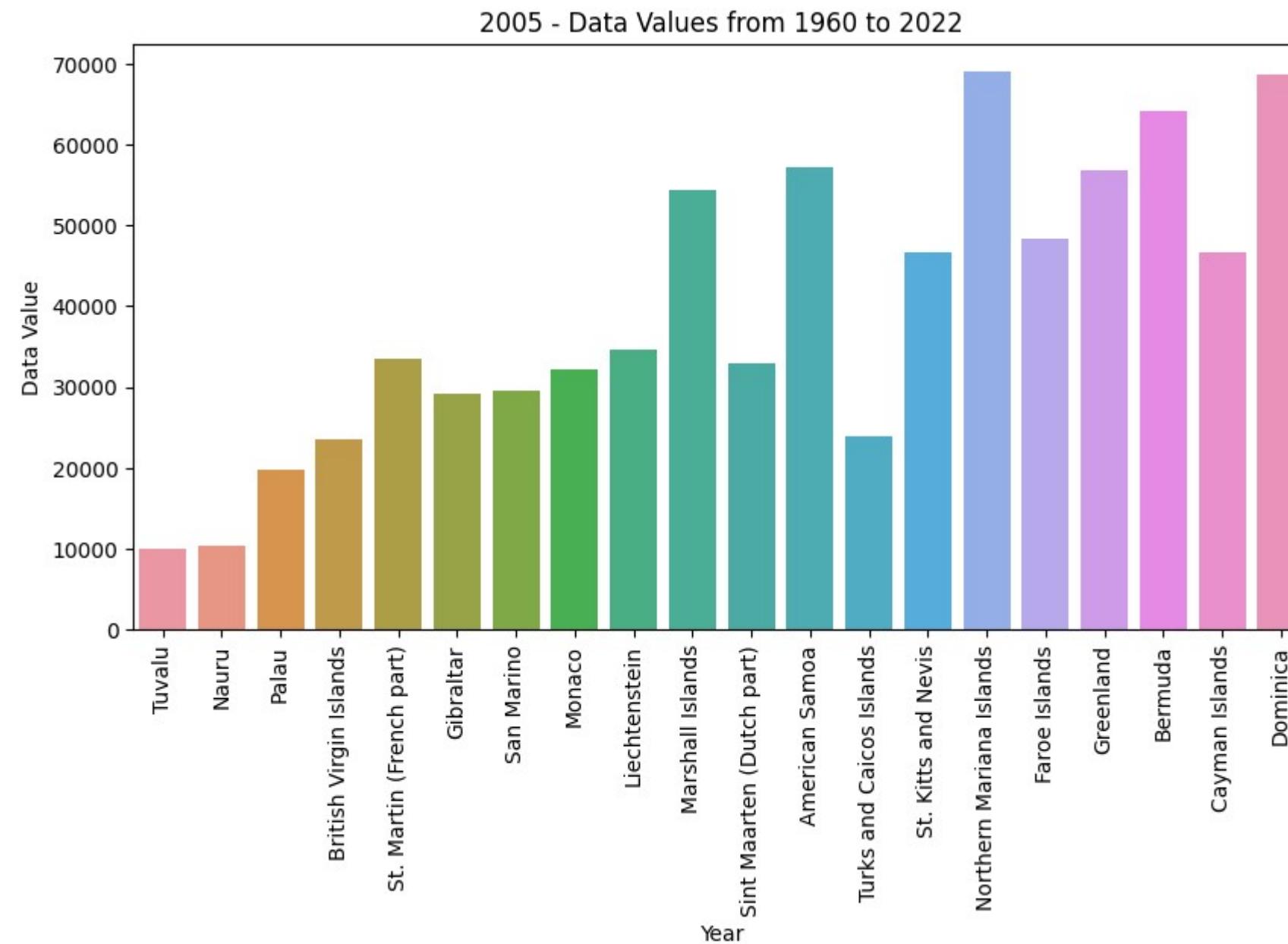


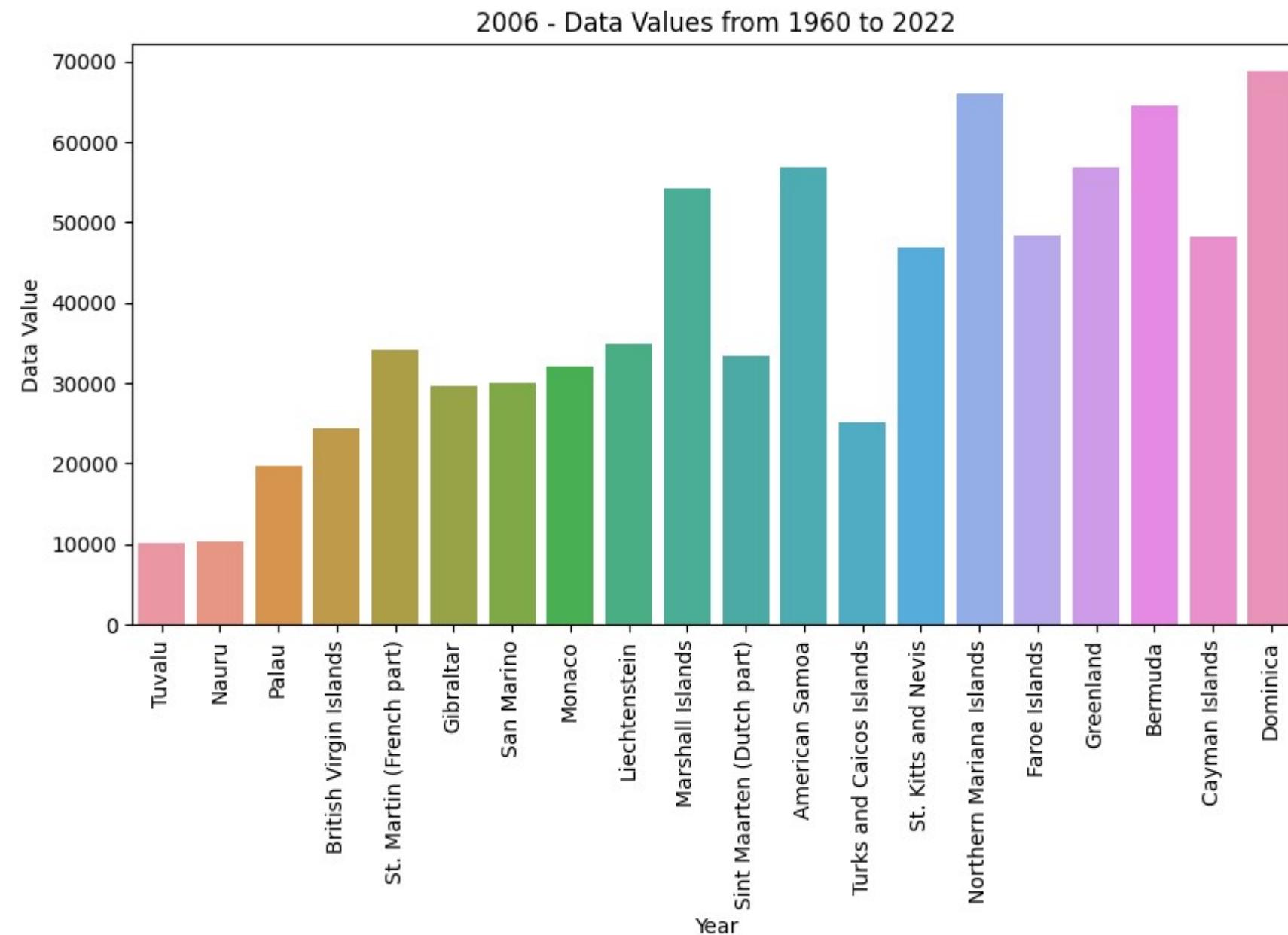
2003 - Data Values from 1960 to 2022



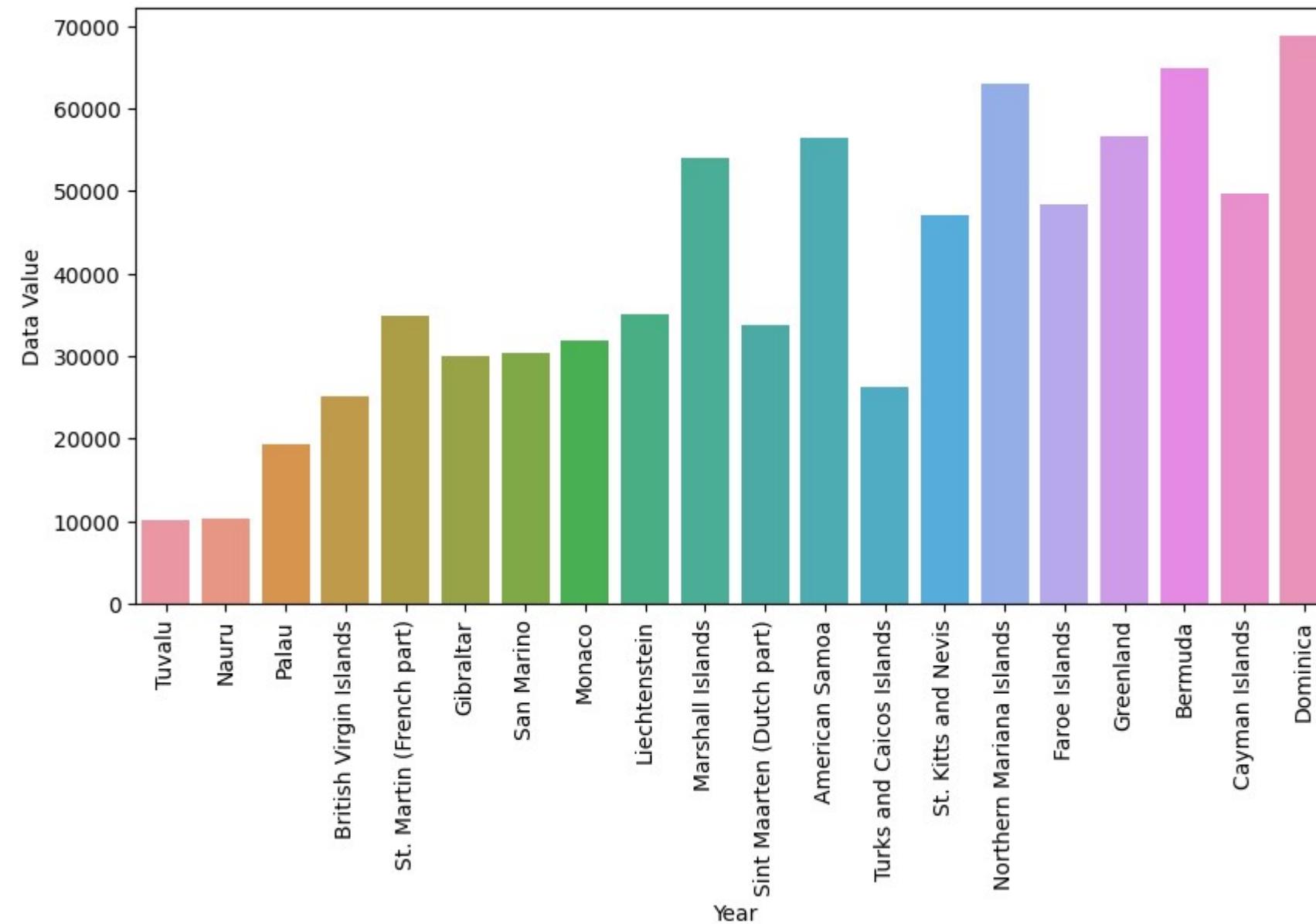
2004 - Data Values from 1960 to 2022



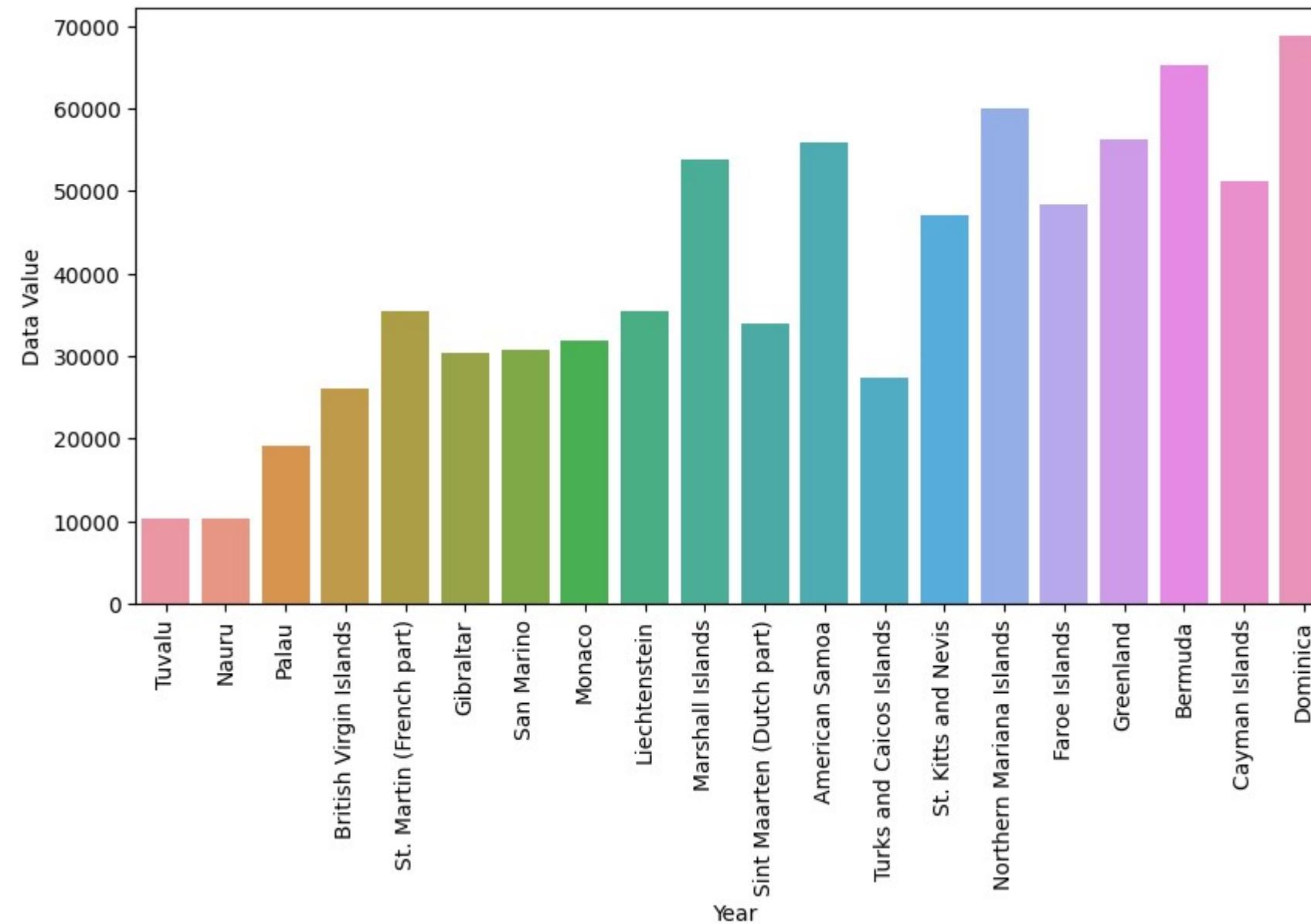




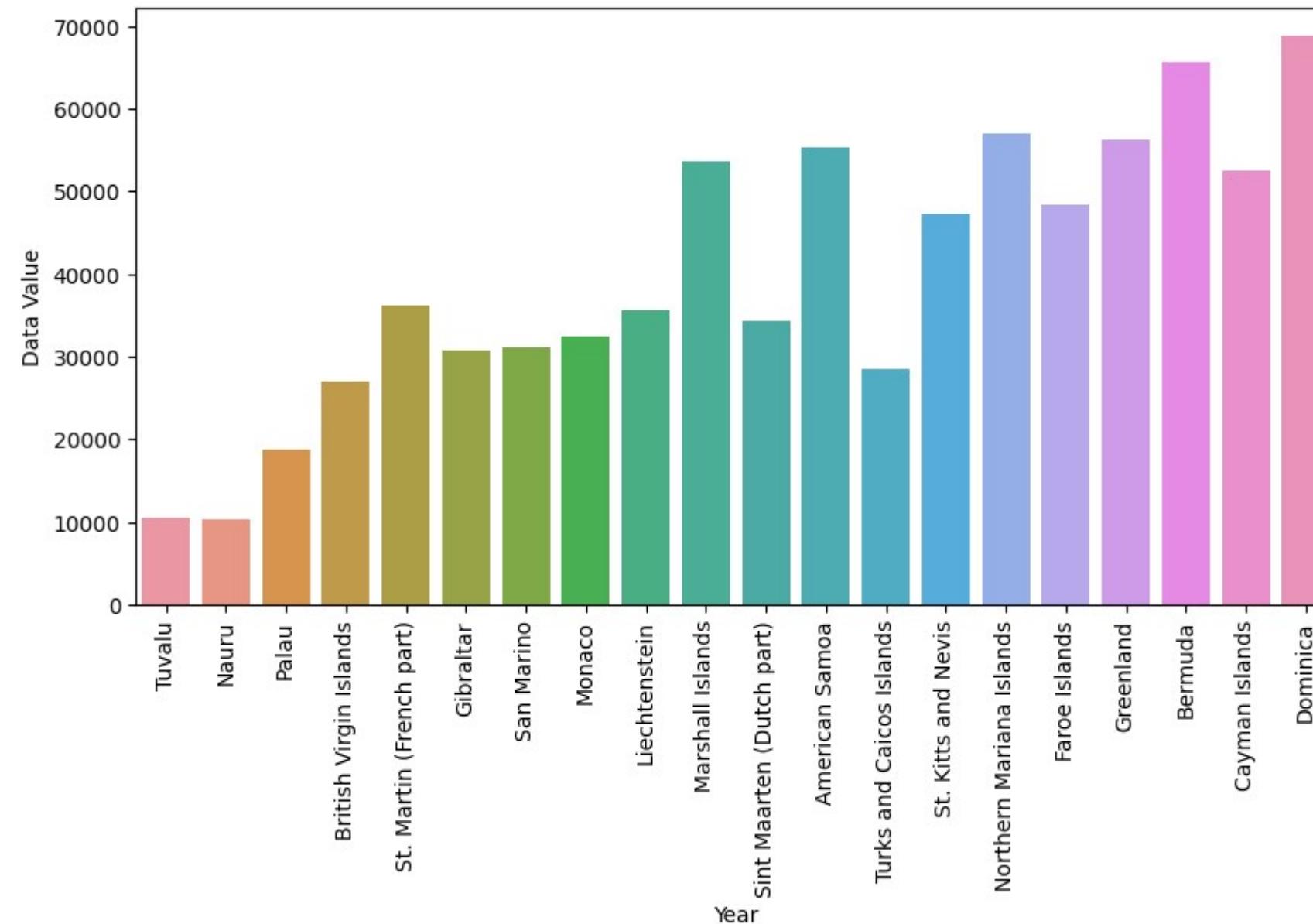
2007 - Data Values from 1960 to 2022



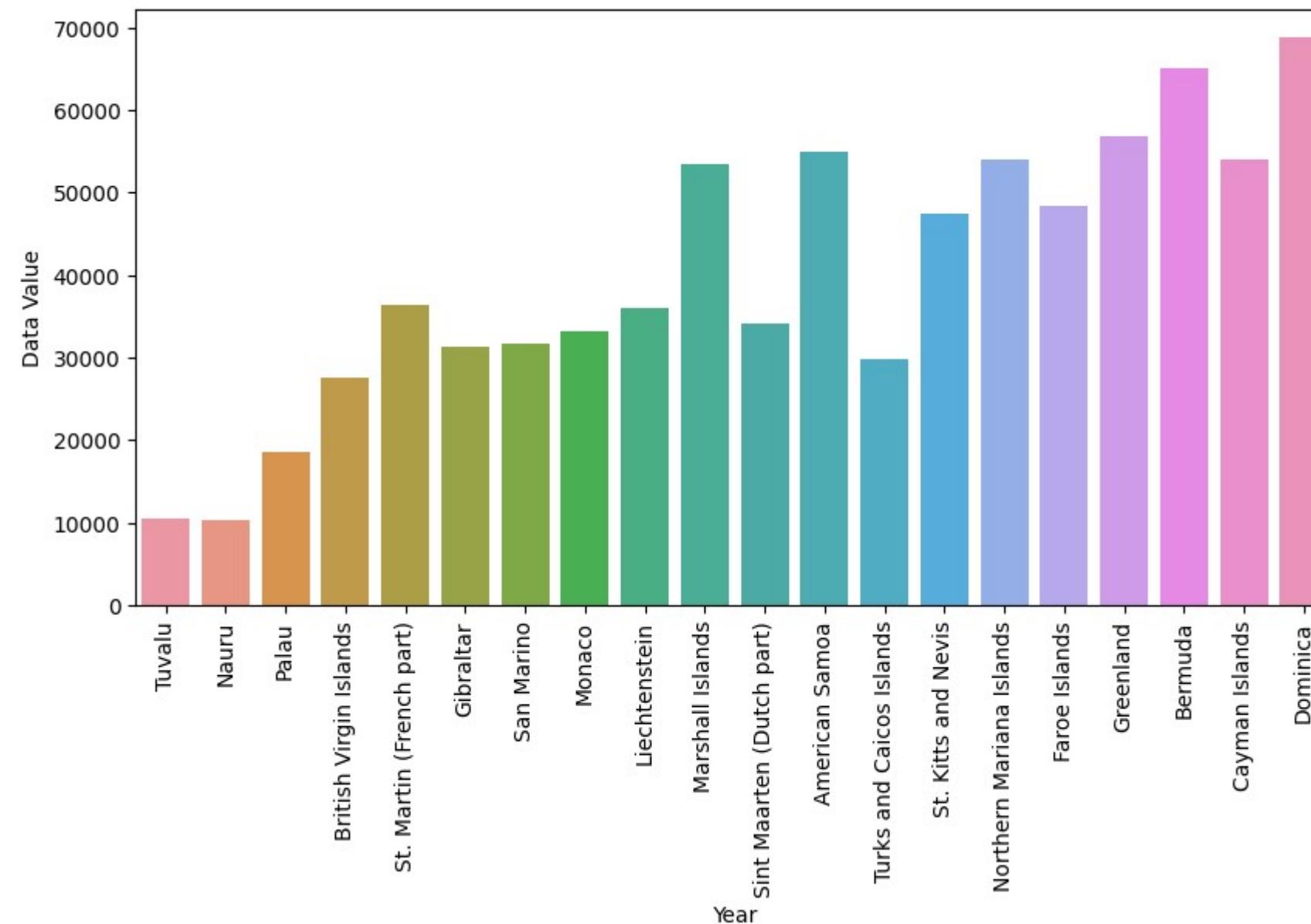
2008 - Data Values from 1960 to 2022



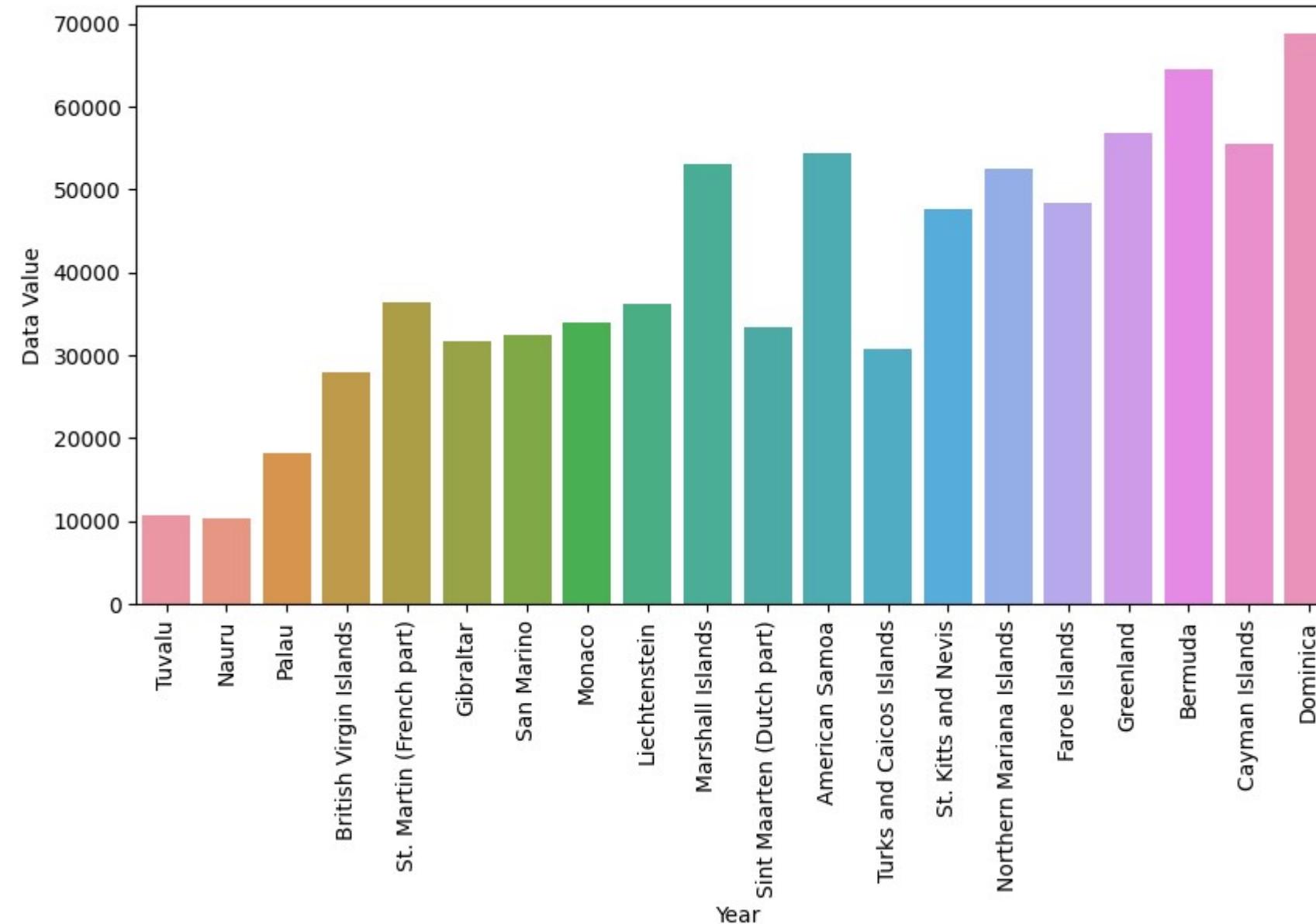
2009 - Data Values from 1960 to 2022



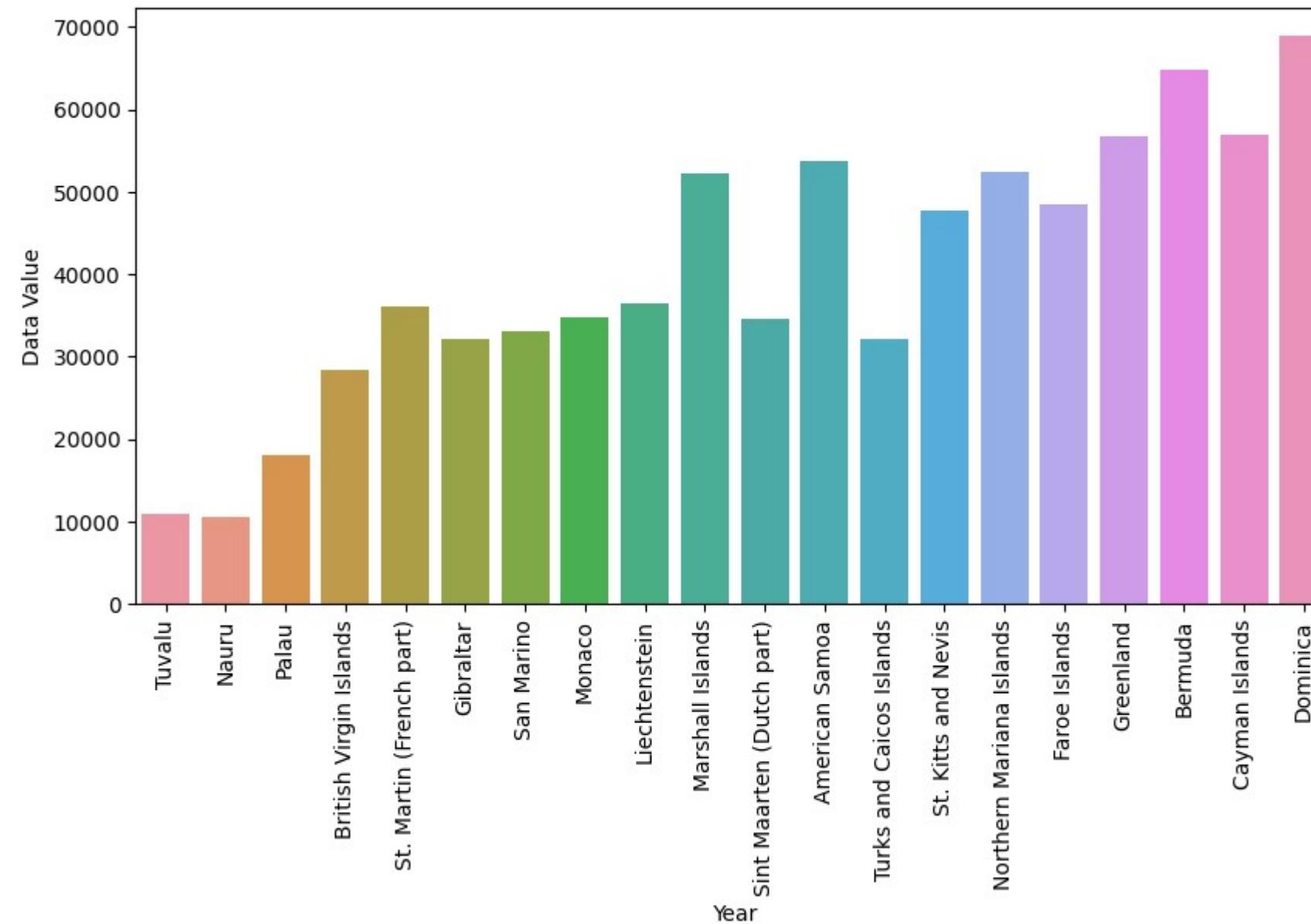
2010 - Data Values from 1960 to 2022



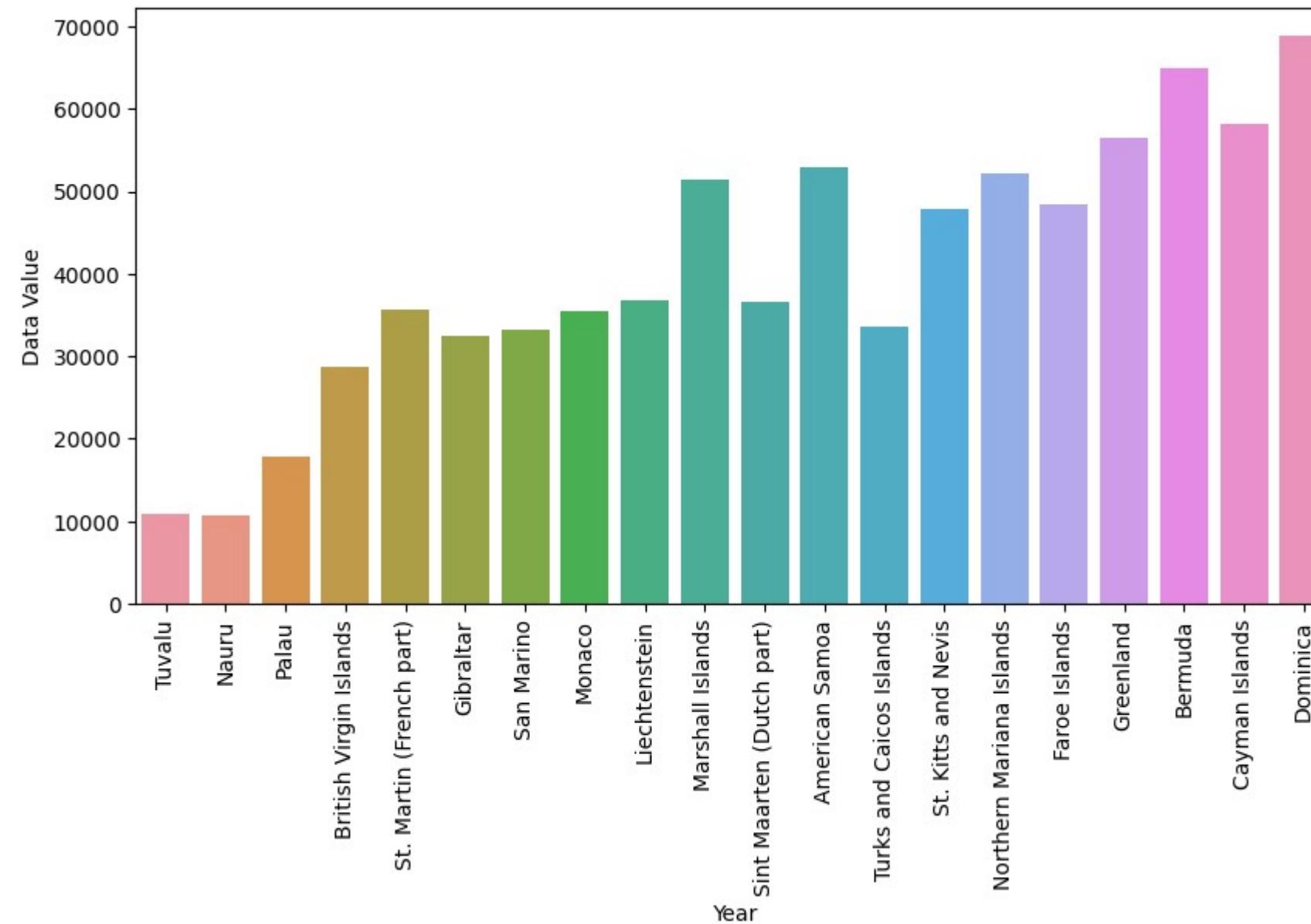
2011 - Data Values from 1960 to 2022



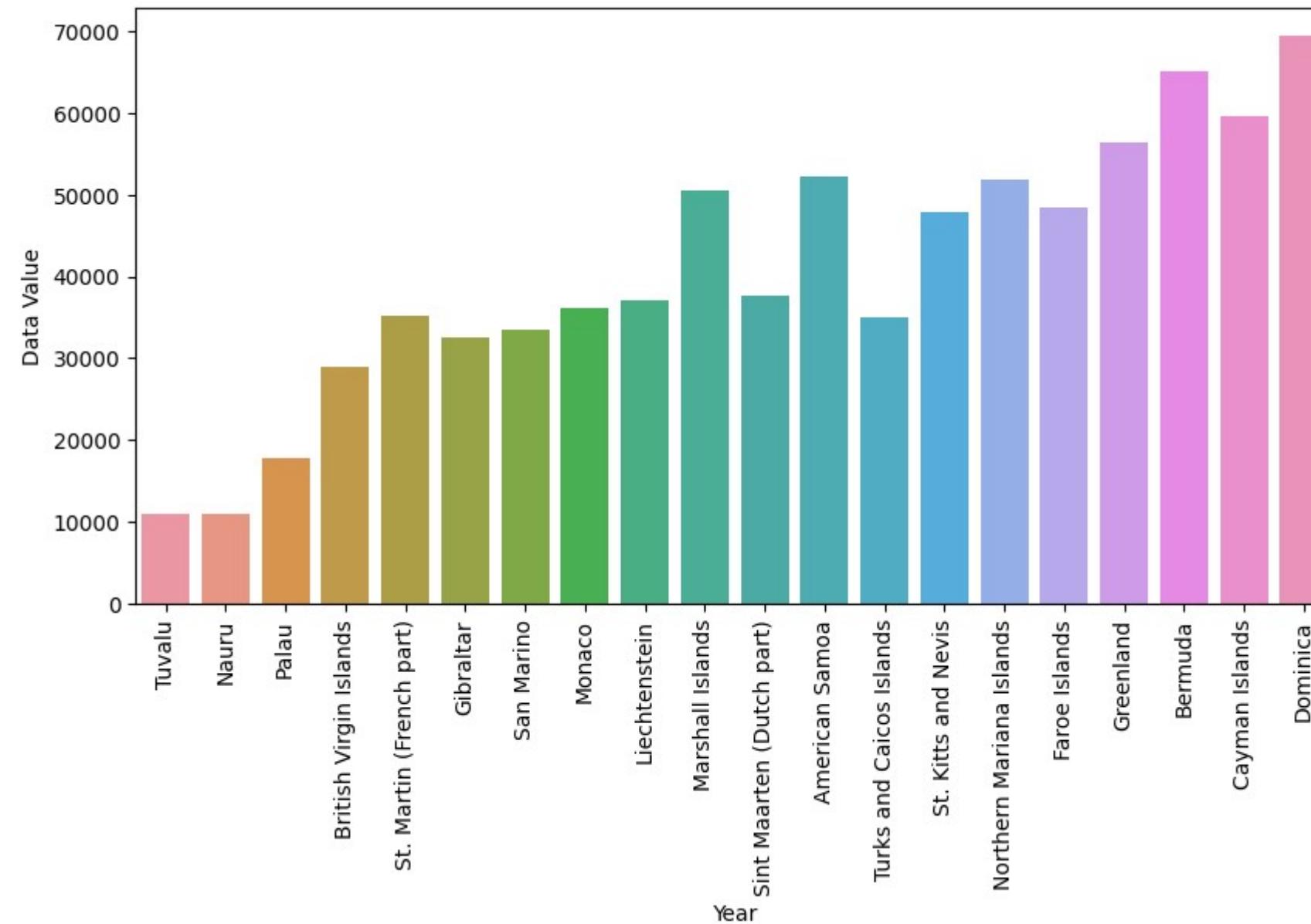
2012 - Data Values from 1960 to 2022



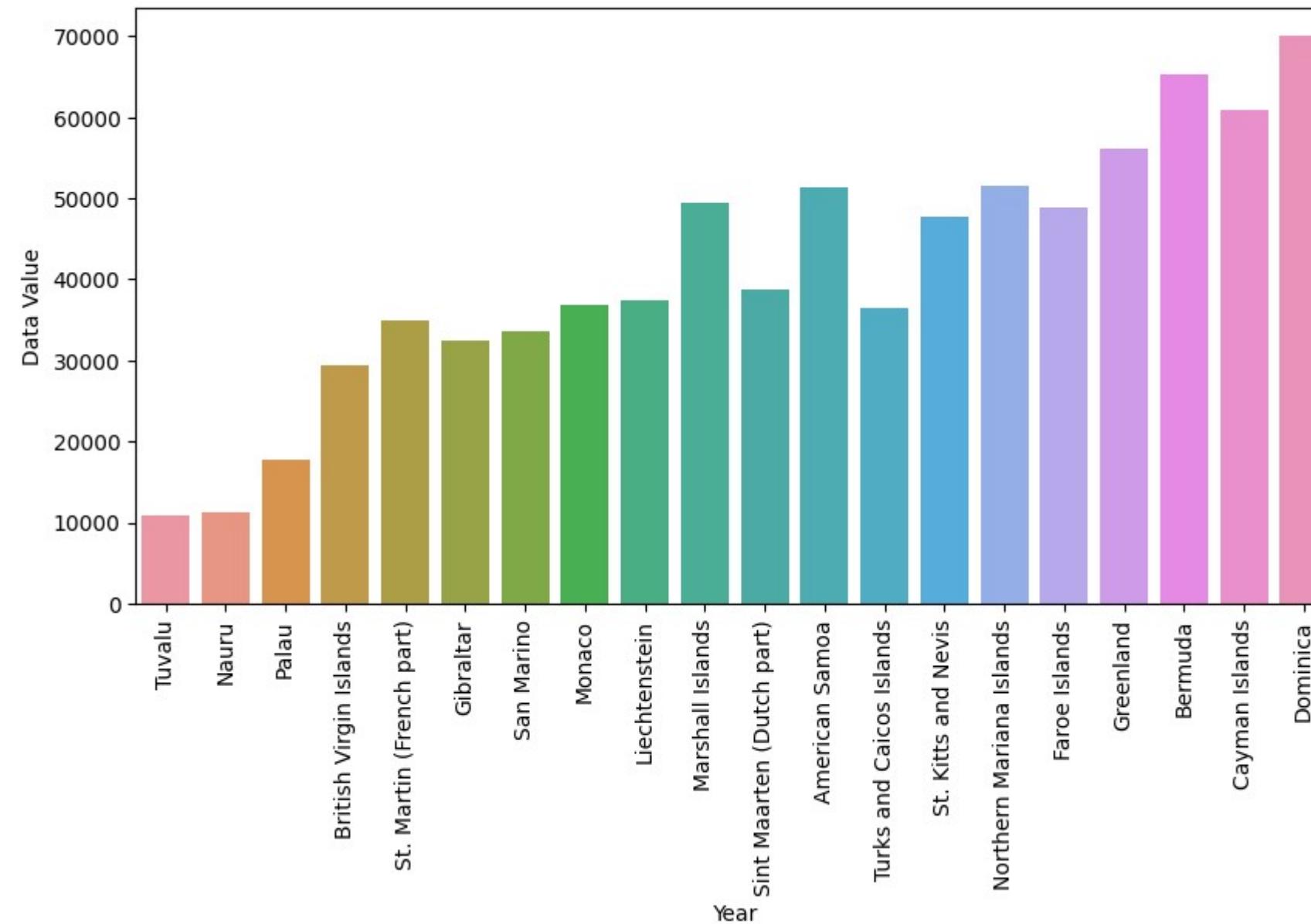
2013 - Data Values from 1960 to 2022



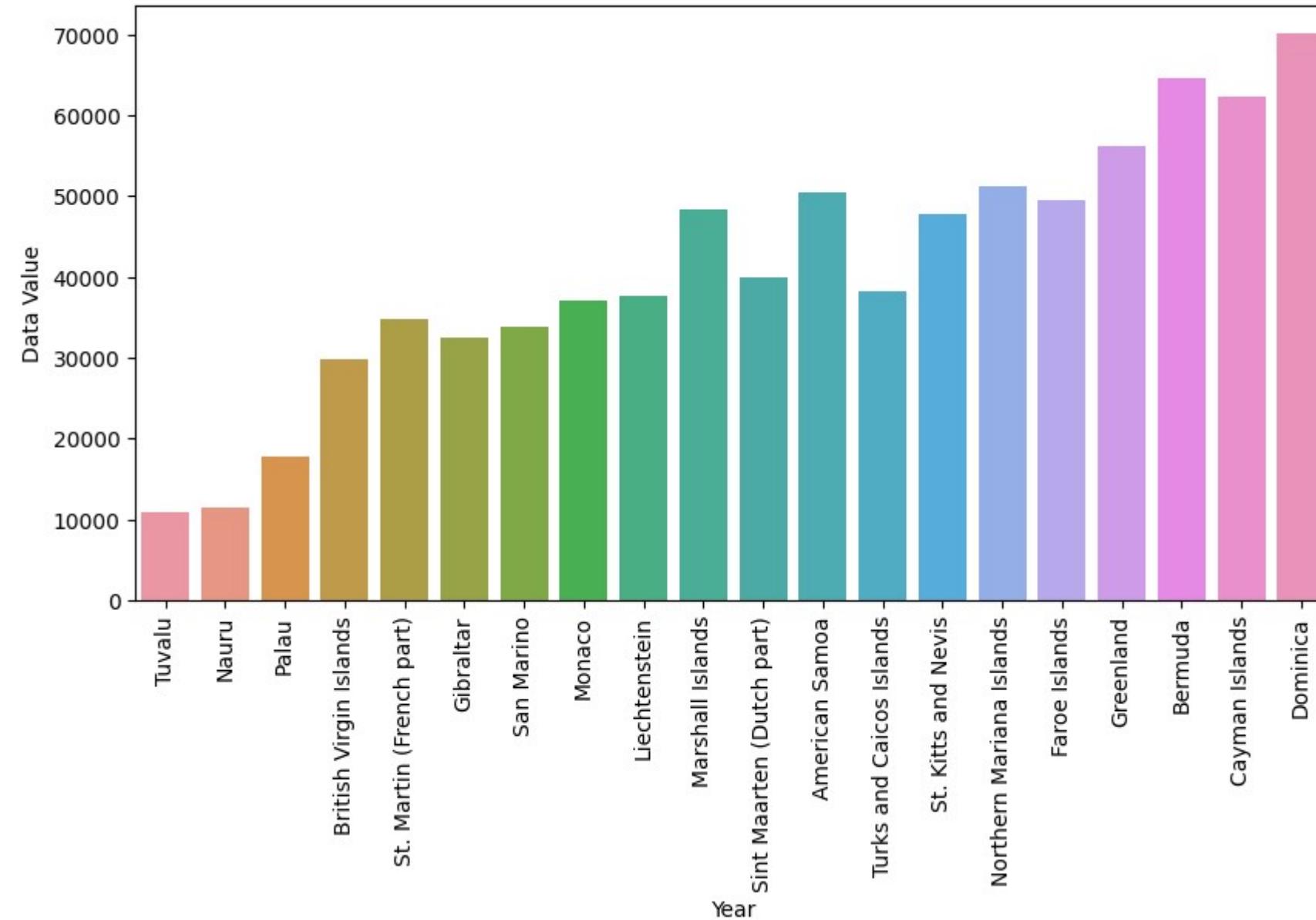
2014 - Data Values from 1960 to 2022



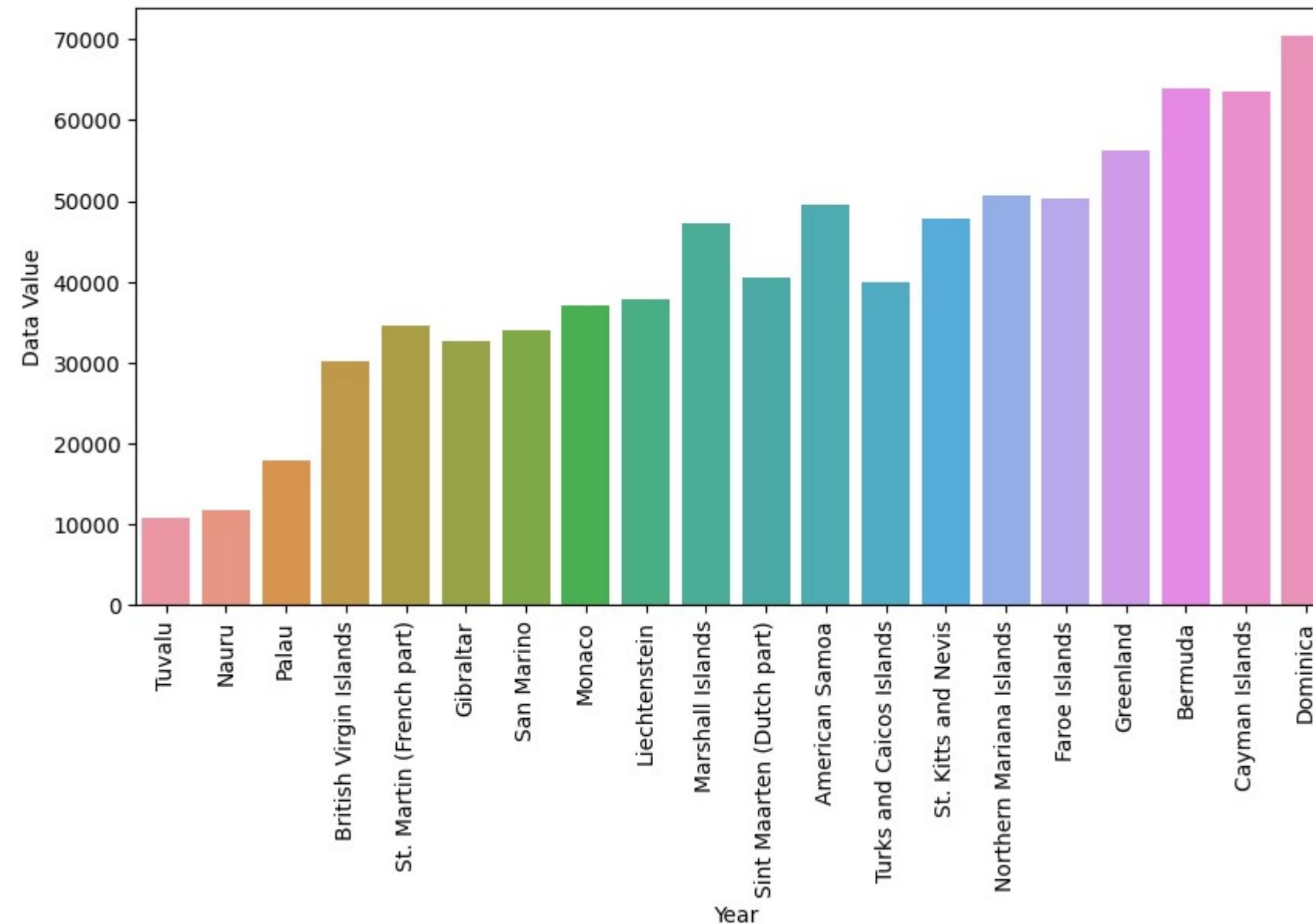
2015 - Data Values from 1960 to 2022



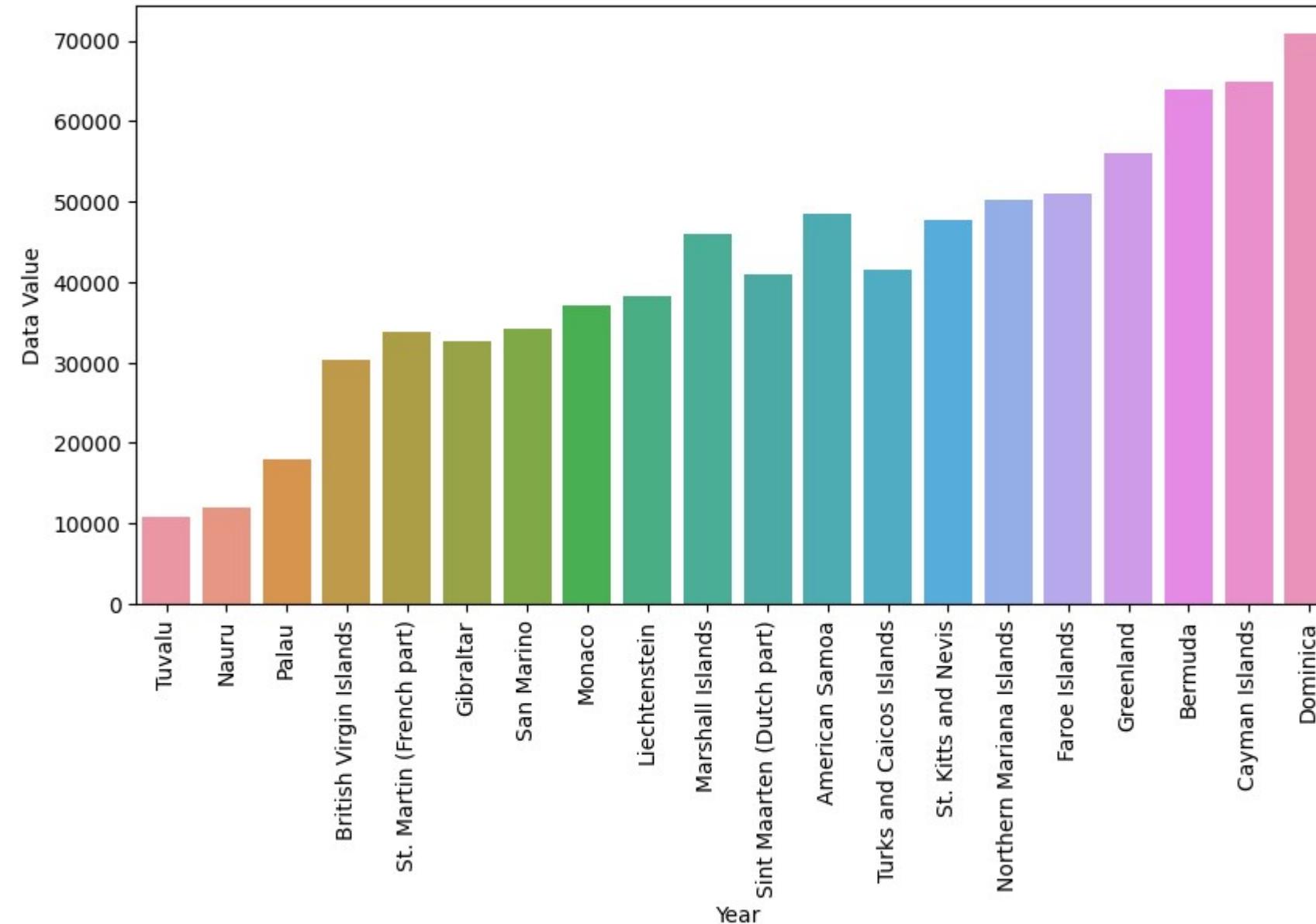
2016 - Data Values from 1960 to 2022



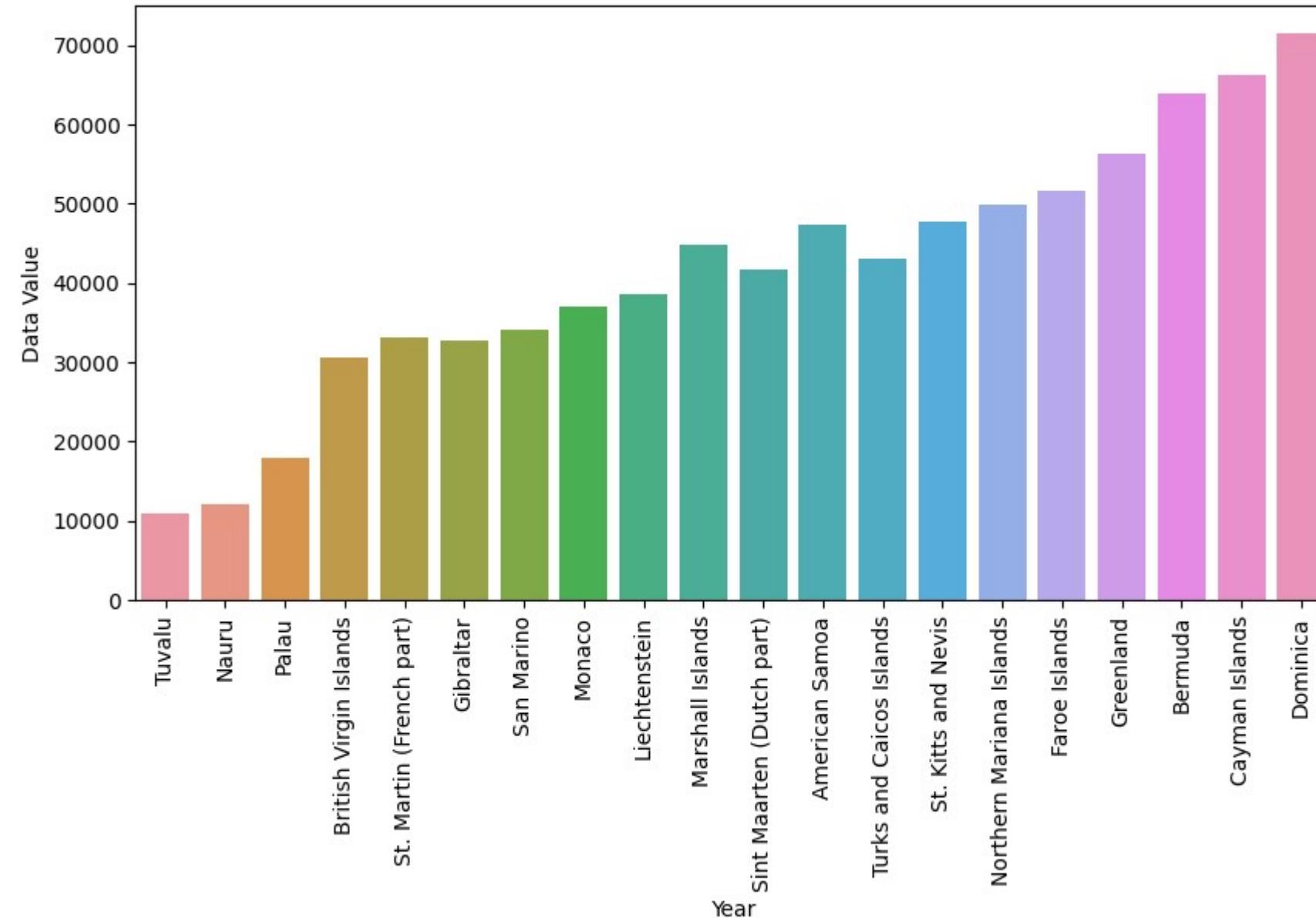
2017 - Data Values from 1960 to 2022



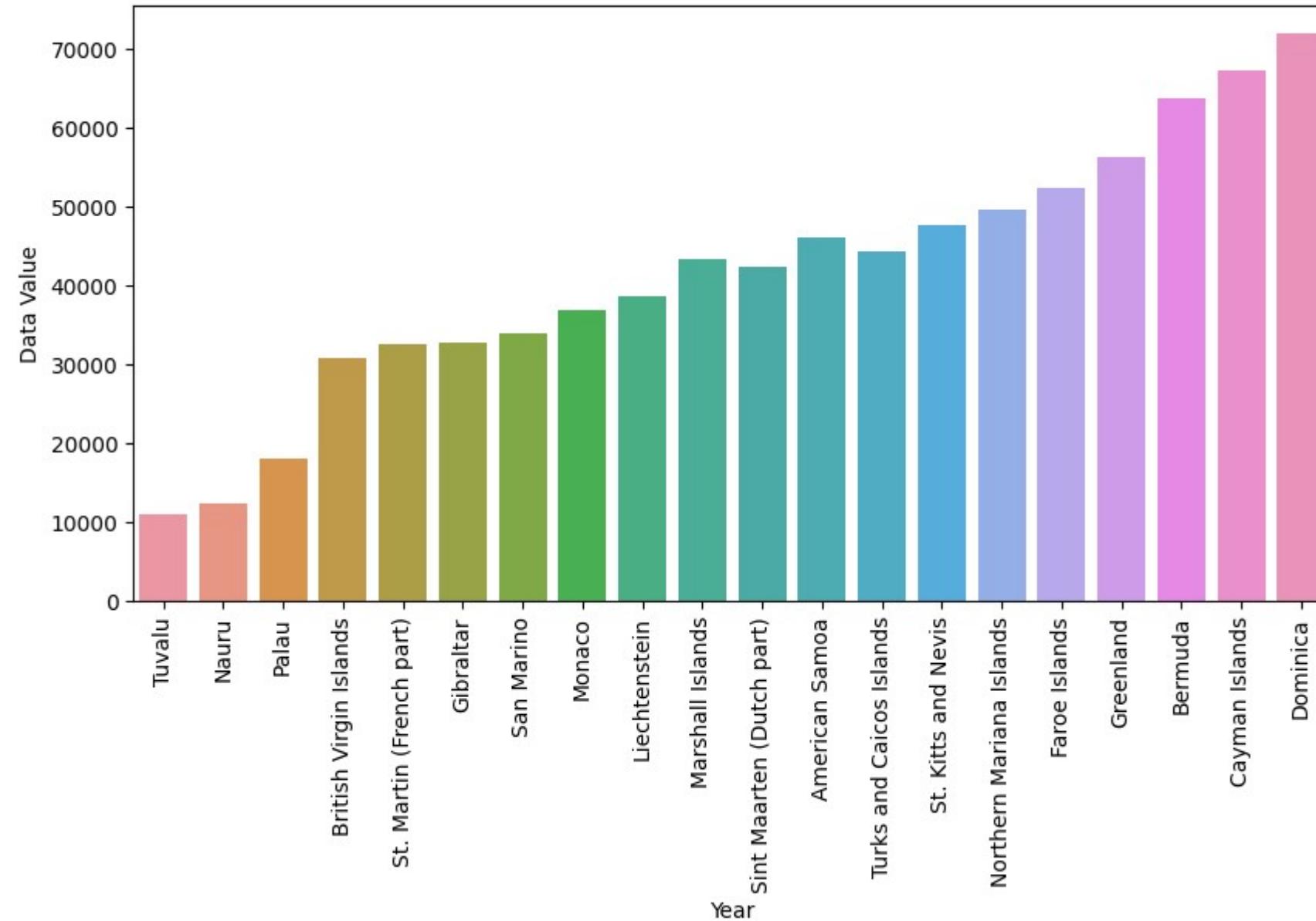
2018 - Data Values from 1960 to 2022



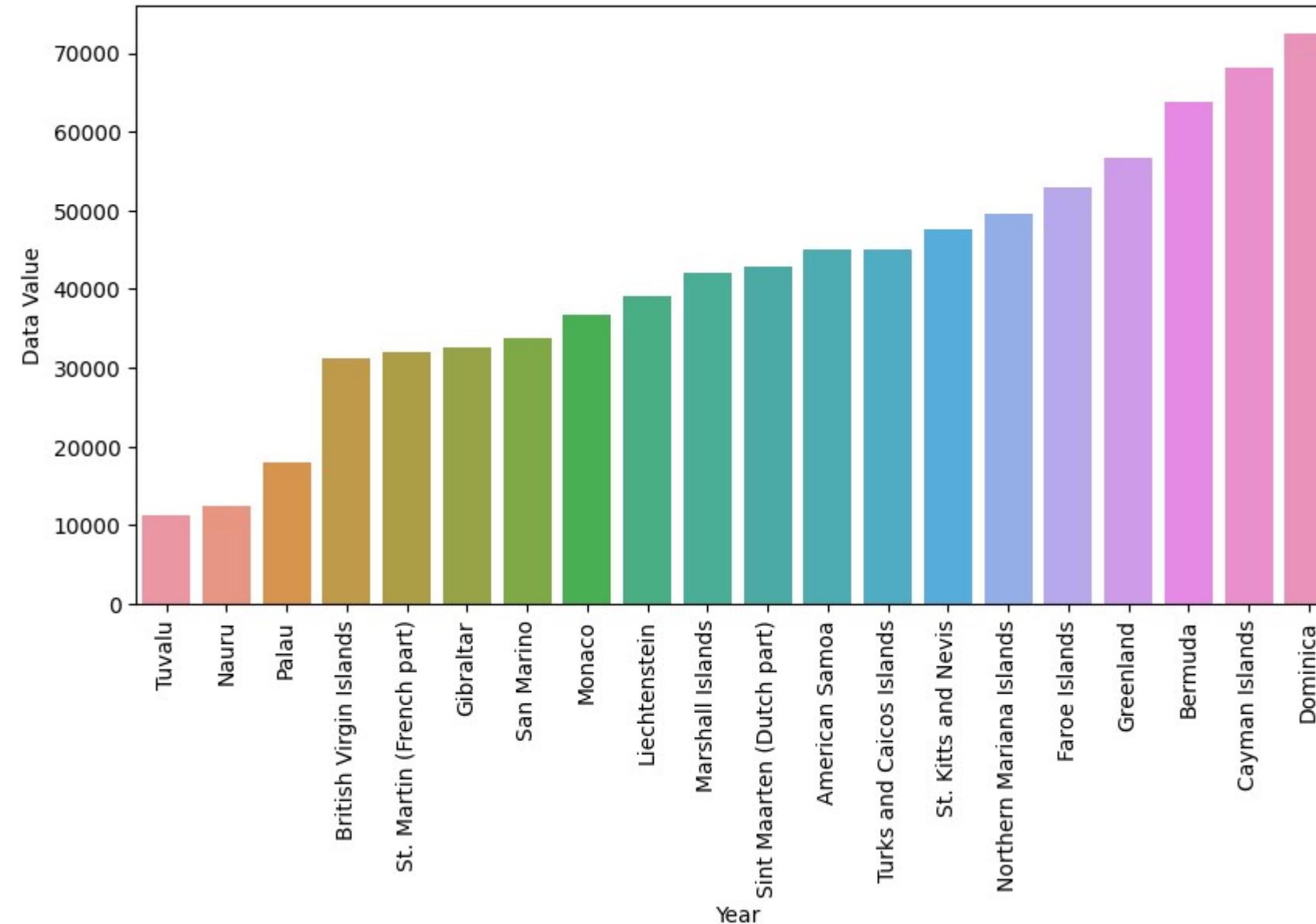
2019 - Data Values from 1960 to 2022

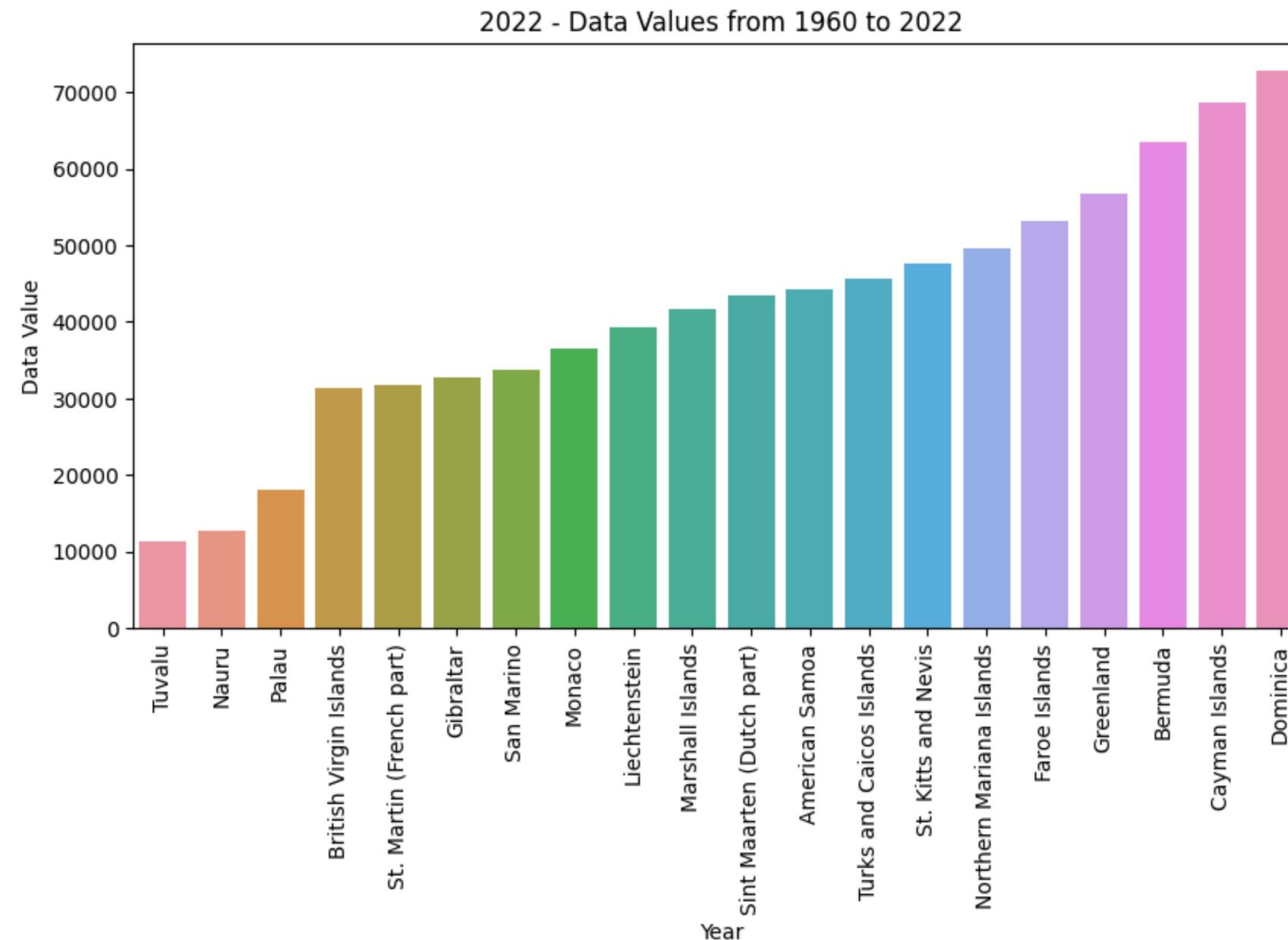


2020 - Data Values from 1960 to 2022



2021 - Data Values from 1960 to 2022





In []: