Winter_Olympics_Analysis

April 26, 2022

[1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
import warnings
warnings.filterwarnings('ignore')
```

[13]:
```
olympic_data=pd.read_csv("winter.csv")
```

[14]:
```
olympic_data.head()
```

[14]:

	Year	City	Sport	Discipline	Country	Gender	Event	Medal	Athlete
0	1924	Chamonix	Biathlon	Biathlon	FIN	Men	Military Patrol	Silver	FIN
1	1924	Chamonix	Biathlon	Biathlon	FRA	Men	Military Patrol	Bronze	FRA
2	1924	Chamonix	Biathlon	Biathlon	SUI	Men	Military Patrol	Gold	SUI
3	1924	Chamonix	Bobsleigh	Bobsleigh	BEL	Men	Four-Man	Bronze	BEL
4	1924	Chamonix	Bobsleigh	Bobsleigh	GBR	Men	Four-Man	Silver	GBR

[15]:
```
olympic_data.tail()
```

[15]:

	Year	City	Sport	Discipline	Country	Gender	Event	Medal	Athlete
3269	2018	PyeongChang	Speed Skating	Speed Skating	KOR	Women	Mass Start	Silver	Kim Bo-Reum
3270	2018	PyeongChang	Speed Skating	Speed Skating	NED	Women	Mass Start	Bronze	Irene Schouten
3271	2018	PyeongChang	Speed Skating	Speed Skating	JPN	Women	Team Pursuit (6 laps)	Gold	Japan
3272	2018	PyeongChang	Speed Skating	Speed Skating	NED	Women			
3273	2018	PyeongChang	Speed Skating	Speed Skating	USA	Women			

```
3272  Team Pursuit (6 laps)  Silver     Netherlands
3273  Team Pursuit (6 laps)  Bronze   United States
```

[16]:
```
olympic_data.shape
```

[16]:
```
(3274, 9)
```

[17]:
```
olympic_data.columns
```

[17]:
```
Index(['Year', 'City', 'Sport', 'Discipline', 'Country', 'Gender', 'Event',
       'Medal', 'Athlete'],
      dtype='object')
```

[18]:
```
olympic_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3274 entries, 0 to 3273
Data columns (total 9 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
 0   Year        3274 non-null   int64
 1   City        3274 non-null   object
 2   Sport       3274 non-null   object
 3   Discipline  3274 non-null   object
 4   Country     3274 non-null   object
 5   Gender      3274 non-null   object
 6   Event       3274 non-null   object
 7   Medal       3274 non-null   object
 8   Athlete     3274 non-null   object
dtypes: int64(1), object(8)
memory usage: 230.3+ KB
```

[19]:
```
olympic_data.describe()
```

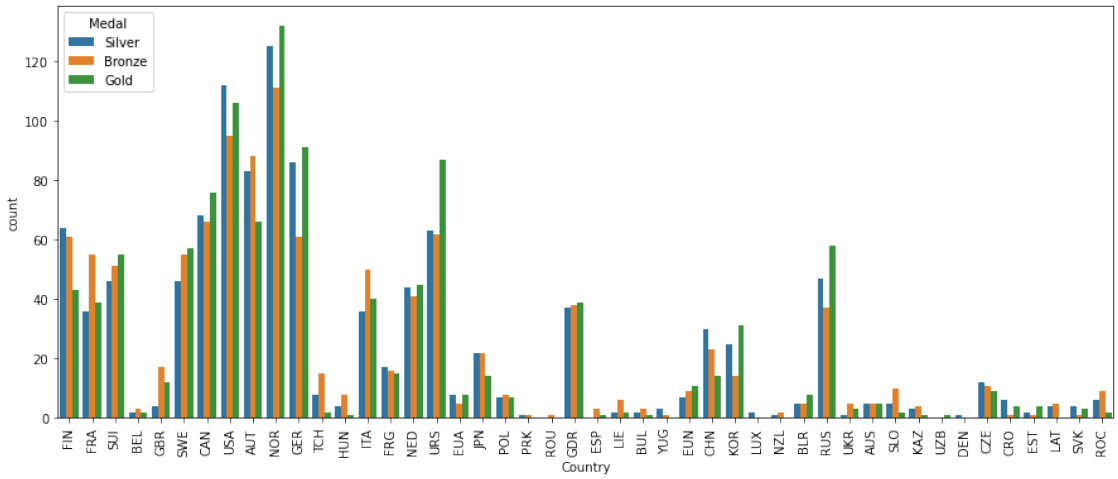
[19]:
```
              Year
count  3274.000000
mean   1989.351252
std      24.275321
min    1924.000000
25%    1976.000000
50%    1994.000000
75%    2010.000000
max    2018.000000
```

[20]:
```
olympic_data.isnull().sum()
```

[20]:
```
Year          0
City          0
```

```
Sport         0
Discipline    0
Country       0
Gender        0
Event         0
Medal         0
Athlete       0
dtype: int64
```

[21]:
```
plt.figure(figsize=(15,6))
sns.countplot(x = 'Country', hue = 'Medal', data = olympic_data)
plt.xticks(rotation = 90)
plt.show()
```



[25]:
```
country_medals = olympic_data[['Country', 'Medal']] \
.groupby('Country').count() \
.sort_values('Medal', ascending=False) \
.head(20)
```

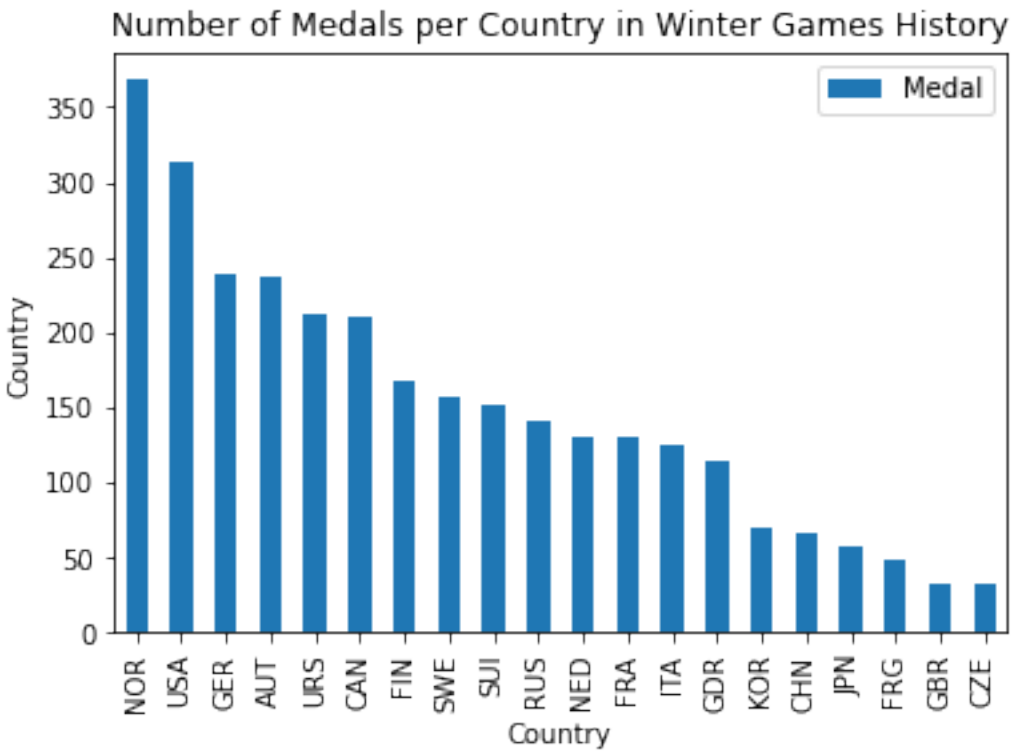
[23]:
```
country_medals
```

[23]:
```
         Medal
Country
NOR        368
USA        313
GER        238
AUT        237
URS        212
CAN        210
FIN        168
```

```
SWE        158
SUI        152
RUS        142
NED        130
FRA        130
ITA        126
GDR        114
KOR         70
CHN         67
JPN         58
FRG         48
GBR         33
CZE         32
```

[24]:
```
plt.figure(figsize=(10,6))
country_medals.plot(kind='bar')
plt.ylabel('Country')
plt.title('Number of Medals per Country in Winter Games History');
```

```
<Figure size 720x432 with 0 Axes>
```

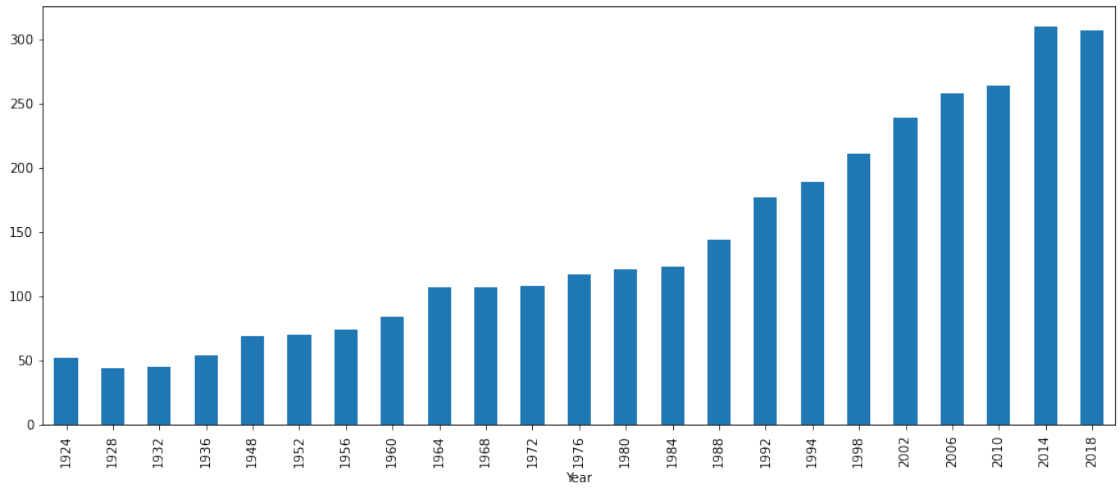


[26]:
```
medal_yearwise=olympic_data.groupby('Year')['Medal'].count()
```

[27]:
```
medal_yearwise
```

[27]:
```
Year
1924     52
1928     44
1932     45
1936     54
1948     69
1952     70
1956     74
1960     84
1964    107
1968    107
1972    108
1976    117
1980    121
1984    123
1988    144
1992    177
1994    189
1998    211
2002    239
2006    258
2010    264
2014    310
2018    307
Name: Medal, dtype: int64
```

[28]:
```
plt.figure(figsize=(15,6))
medal_yearwise.plot(kind='bar')
plt.xticks(rotation = 90)
plt.show()
```



[30]:
```
import plotly.express as px
```

[39]:
```
gold_medal = olympic_data[olympic_data['Medal']=="Gold"] \
             .groupby(["Country"])\
             .count()\
             .sort_values(by='Medal', ascending=False).reset_index()
line_colors = ["red", "blue","green","yellow","orange"]
gold_medal_plot= px.pie(gold_medal.head(5), values='Medal',hole=0.6,␣
 ↪names='Country',title= "   Top 5 Gold Winning Nations")
gold_medal_plot.show()
```

[40]:
```
silver_medal = olympic_data[olympic_data['Medal']=="Silver"] \
             .groupby(["Country"])\
             .count()\
             .sort_values(by='Medal', ascending=False).reset_index()
line_colors = ["red", "blue","green","yellow","orange"]
silver_medal_plot= px.pie(silver_medal.head(5), values='Medal',hole=0.6,␣
 ↪names='Country',title="Top 5 Silver Winning Nations")
silver_medal_plot.show()
```

[41]:
```
bronze_medal = olympic_data[olympic_data['Medal']=="Bronze"] \
             .groupby(["Country"])\
             .count()\
             .sort_values(by='Medal', ascending=False).reset_index()
line_colors = ["red", "blue","green","yellow","orange"]
bronze_medal_plot= px.pie(bronze_medal.head(5), values='Medal',hole=0.6,␣
 ↪names='Country',title="Top 5 Bronze Winning Nations")
bronze_medal_plot.show()
```

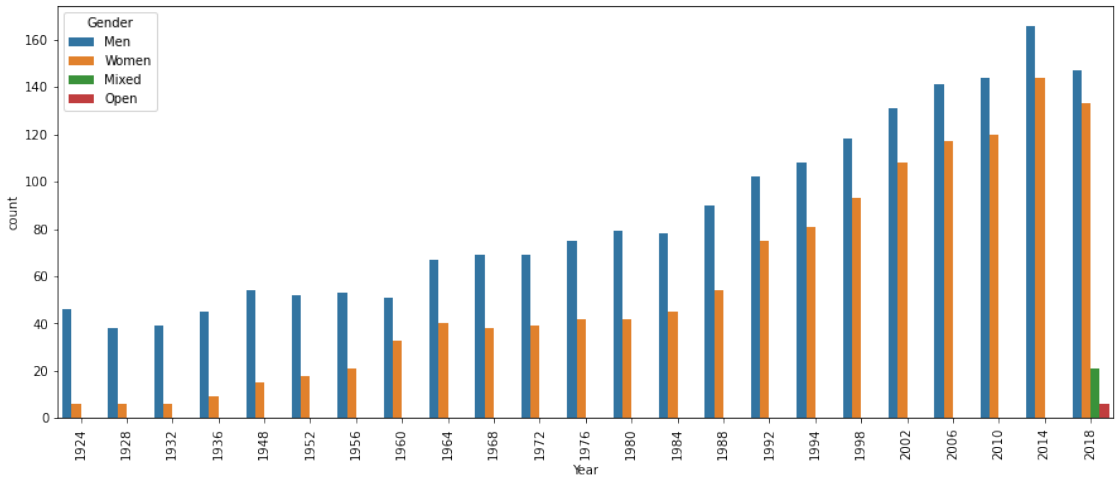
[42]:
```
yearly_medal=olympic_data.groupby('Year')['Medal'].value_counts()
```

[43]:
```
yearly_medal
```

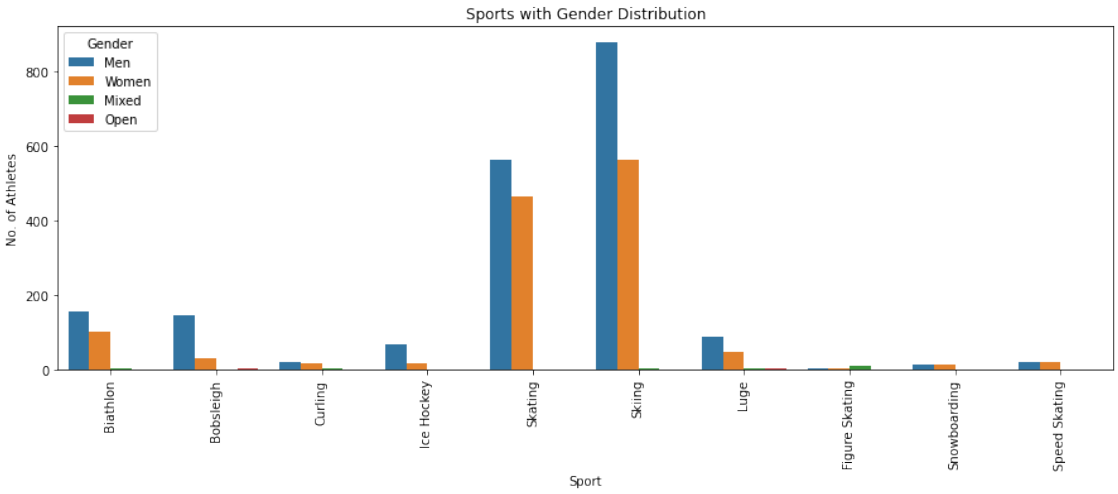
[43]:
```
Year  Medal
1924  Bronze     18
      Gold       17
      Silver     17
1928  Bronze     16
      Gold       15
                ...
2014  Gold      104
      Silver    102
2018  Gold      103
      Bronze    102
```

```
      Silver    102
Name: Medal, Length: 69, dtype: int64
```

[44]:
```
plt.figure(figsize=(15,6))
sns.countplot(x = 'Year', hue = 'Gender', data = olympic_data)
plt.xticks(rotation = 90)
plt.show()
```

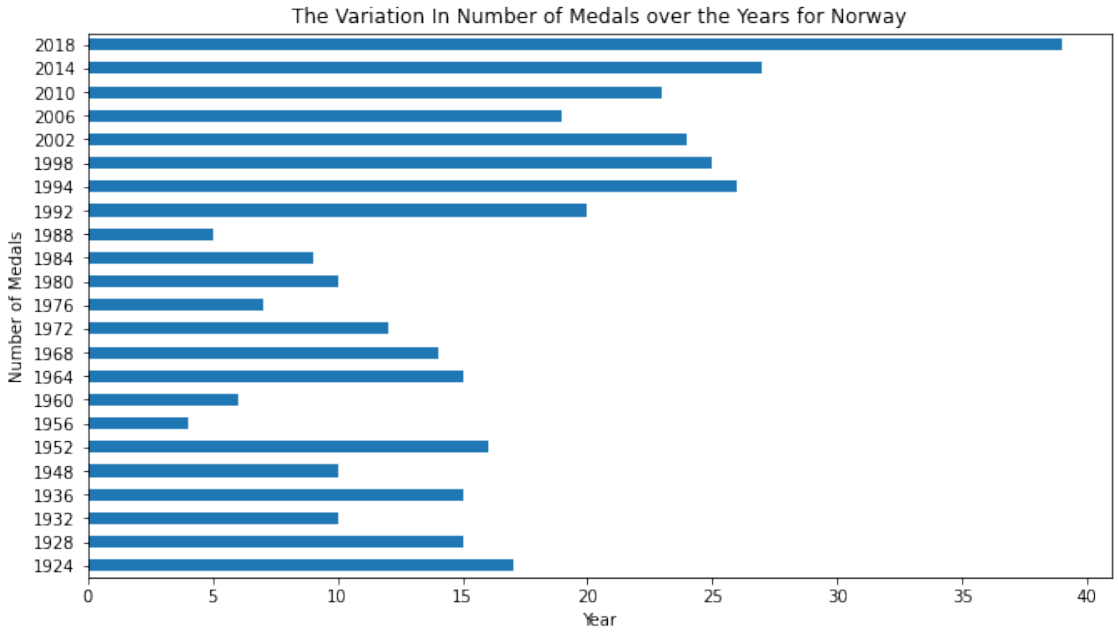


[45]:
```
plt.figure(figsize=(15, 5))
sport_by_gender = olympic_data['Sport'].value_counts().index
sns.countplot(x='Sport', hue = 'Gender', data = olympic_data)
plt.xticks(rotation=90)
plt.title('Sports with Gender Distribution')
plt.xlabel('Sport')
plt.ylabel('No. of Athletes');
```

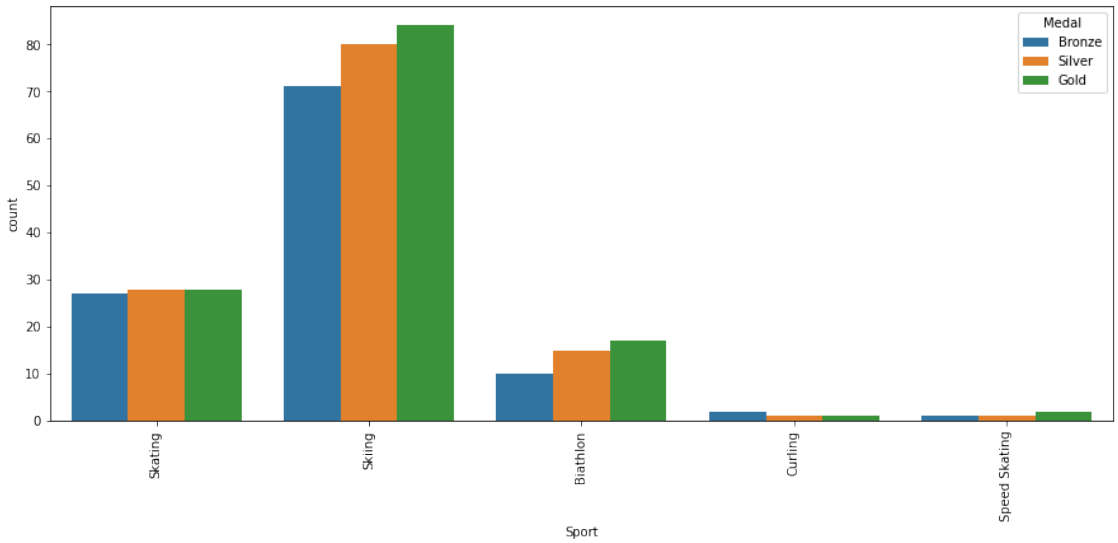


[46]:
```
norway_country = olympic_data[olympic_data['Country']=='NOR']
norway_medals_data = norway_country.groupby('Year')['Medal'].count()
norway_medals_data.plot(kind='barh', figsize=(11,6))
plt.ylabel('Number of Medals')
plt.xlabel('Year')
plt.title('The Variation In Number of Medals over the Years for Norway')
```

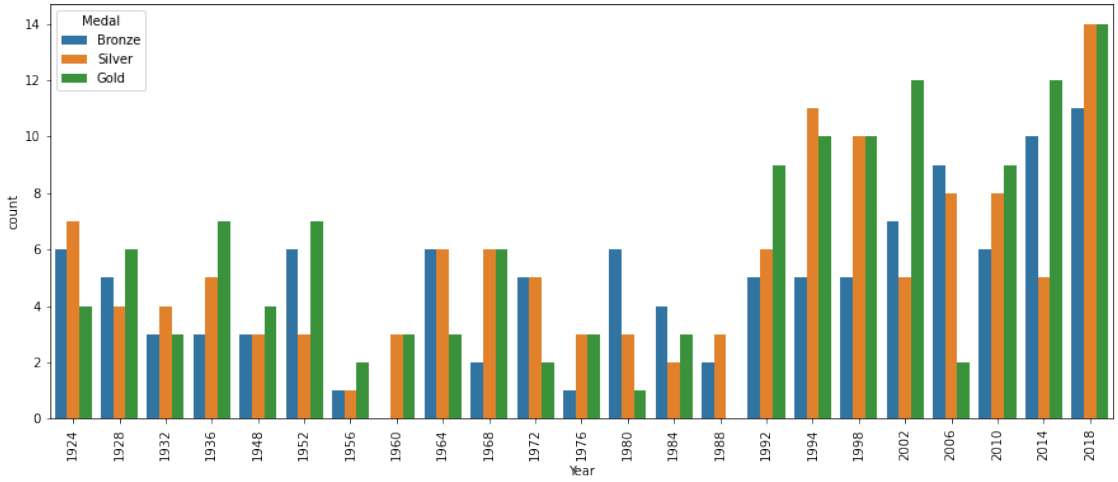
[46]:
```
Text(0.5, 1.0, 'The Variation In Number of Medals over the Years for Norway')
```



[47]:
```
plt.figure(figsize=(15,6))
sns.countplot(x = 'Sport', hue = 'Medal', data = norway_country)
plt.xticks(rotation = 90)
plt.show()
```



[48]:
```
plt.figure(figsize=(15,6))
sns.countplot(x = 'Year', hue = 'Medal', data = norway_country)
plt.xticks(rotation = 90)
plt.show()
```



[49]:
```
country_joined = olympic_data.groupby('Year')['Country'].nunique() \
.reset_index()
```

[50]:
```
country_joined
```

[50]:

	Year	Country
0	1924	10
1	1928	12
2	1932	10
3	1936	11
4	1948	13
5	1952	13
6	1956	13
7	1960	14
8	1964	14
9	1968	15
10	1972	17
11	1976	16
12	1980	19
13	1984	17
14	1988	17
15	1992	20
16	1994	22
17	1998	24
18	2002	24
19	2006	26
20	2010	26
21	2014	26
22	2018	30

[60]:
```
fig=px.histogram(country_joined,x='Year',y='Country',title="<b>The Variation In␣
↪Number over the Years")
fig.show()
```

[56]:
```
discipline_games = olympic_data.groupby('Year')['Discipline'].nunique() \
.reset_index()
```

[57]:
```
discipline_games
```

[57]:

	Year	Discipline
0	1924	9
1	1928	8
2	1932	7
3	1936	8
4	1948	9
5	1952	8
6	1956	8
7	1960	8
8	1964	10
9	1968	10
10	1972	10
11	1976	10

12	1980	10
13	1984	10
14	1988	10
15	1992	12
16	1994	12
17	1998	14
18	2002	15
19	2006	15
20	2010	15
21	2014	15
22	2018	15