In [1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
import warnings
warnings.filterwarnings("ignore")
```

In [2]:

```
monkeypox_data = pd.read_csv("worldwide_monkeypox.csv")
```

In [3]:

```
monkeypox_data
```

Out[3]:

	Date_confirmation	Country	City	Age	Gender	Symptoms	Hospitalised (Y/N/NA)	Isolated (Y/N/NA)	Trave
0	06-05-2022	England	London	NaN	NaN	rash	Y	Y	
1	12-05-2022	England	London	NaN	NaN	rash	Y	Y	
2	13-05-2022	England	London	NaN	NaN	vesicular rash	N	Y	
3	15-05-2022	England	London	NaN	male	vesicular rash	Y	Y	
4	15-05-2022	England	London	NaN	male	vesicular rash	Y	Y	
...	...	...	...	...	...	...	...	...	
612	31-05-2022	England	NaN	NaN	NaN	NaN	NaN	NaN	
613	31-05-2022	England	NaN	NaN	NaN	NaN	NaN	NaN	
614	31-05-2022	England	NaN	NaN	NaN	NaN	NaN	NaN	
615	31-05-2022	Germany	Berlin	NaN	male	NaN	Y	NaN	
616	01-06-2022	Italy	NaN	NaN	NaN	NaN	NaN	NaN	

617 rows × 9 columns

In [4]:

```
monkeypox_data.tail()
```

Out[4]:

	Date_confirmation	Country	City	Age	Gender	Symptoms	Hospitalised (Y/N/NA)	Isolated (Y/N/NA)	Travel_ (
612	31-05-2022	England	NaN	NaN	NaN	NaN	NaN	NaN	
613	31-05-2022	England	NaN	NaN	NaN	NaN	NaN	NaN	
614	31-05-2022	England	NaN	NaN	NaN	NaN	NaN	NaN	
615	31-05-2022	Germany	Berlin	NaN	male	NaN	Y	NaN	
616	01-06-2022	Italy	NaN	NaN	NaN	NaN	NaN	NaN	

In [5]:

```
monkeypox_data.shape
```

Out[5]:

```
(617, 9)
```

In [6]:

```
monkeypox_data.columns
```

Out[6]:

```
Index(['Date_confirmation', 'Country', 'City', 'Age', 'Gender', 'Symptom
s',
       'Hospitalised (Y/N/NA)', 'Isolated (Y/N/NA)',
       'Travel_history (Y/N/NA)'],
      dtype='object')
```

In [7]:

```
monkeypox_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 617 entries, 0 to 616
Data columns (total 9 columns):
 #   Column                  Non-Null Count  Dtype 
---  ------                  --------------  ----- 
 0   Date_confirmation       617 non-null    object
 1   Country                 617 non-null    object
 2   City                    215 non-null    object
 3   Age                     141 non-null    object
 4   Gender                  241 non-null    object
 5   Symptoms                60 non-null     object
 6   Hospitalised (Y/N/NA)   98 non-null     object
 7   Isolated (Y/N/NA)       103 non-null    object
 8   Travel_history (Y/N/NA) 92 non-null     object
dtypes: object(9)
memory usage: 43.5+ KB
```

In [9]:

```
monkeypox_data = monkeypox_data.rename(columns = {'Hospitalised (Y/N/NA)' : 'Hospitalise
                                                  'Isolated (Y/N/NA)' : 'Isolated',
                                                  'Travel_history (Y/N/NA)' : 'Travel_his
```

In [10]:

```
monkeypox_data.nunique()
```

Out[10]:

```
Date_confirmation    19
Country              29
City                 52
Age                  18
Gender                3
Symptoms             16
Hospitalised          2
Isolated              1
Travel_history        2
dtype: int64
```

In [11]:

```
monkeypox_data.isnull().sum()
```

Out[11]:

```
Date_confirmation      0
Country                0
City                 402
Age                  476
Gender               376
Symptoms             557
Hospitalised         519
Isolated             514
Travel_history       525
dtype: int64
```

In [12]:

```
monkeypox_data['Symptoms'].unique()
```

Out[12]:

```
array(['rash', 'vesicular rash', 'skin lesions; ulcerative lesions', nan,
       'ulcerative lesions',
       'Slight swallowing difficulties and an elevated temperature',
       'perianal papules; inguinal adenopathy', 'lesions',
       'genital ulcers', 'fever; rash', 'skin lesions', 'fever; lesions',
       'oral and genital ulcers; fever', 'fever; cough; skin lesions',
       'blisters', 'pustules; fever', 'blisters; high fever'],
      dtype=object)
```

In [13]:

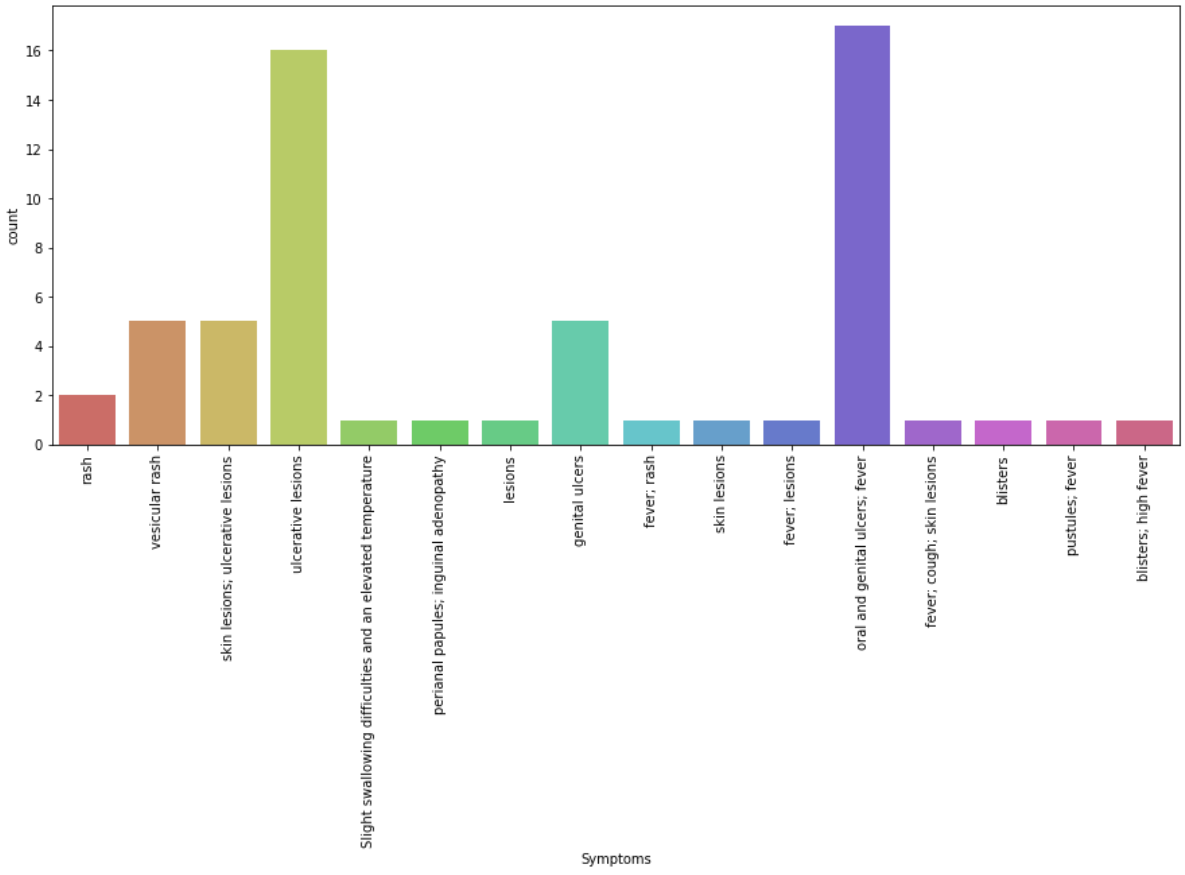
```
monkeypox_data['Symptoms'].value_counts()
```

Out[13]:

```
oral and genital ulcers; fever                                  17
ulcerative lesions                                              16
vesicular rash                                                   5
skin lesions; ulcerative lesions                                 5
genital ulcers                                                   5
rash                                                             2
Slight swallowing difficulties and an elevated temperature       1
perianal papules; inguinal adenopathy                            1
lesions                                                          1
fever; rash                                                      1
skin lesions                                                     1
fever; lesions                                                   1
fever; cough; skin lesions                                       1
blisters                                                         1
pustules; fever                                                  1
blisters; high fever                                             1
Name: Symptoms, dtype: int64
```

In [20]:

```
plt.figure(figsize=(15,6))
sns.countplot('Symptoms', data = monkeypox_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [14]:

```
monkeypox_data['Hospitalised'].unique()
```

Out[14]:

```
array(['Y', 'N', nan], dtype=object)
```

In [15]:

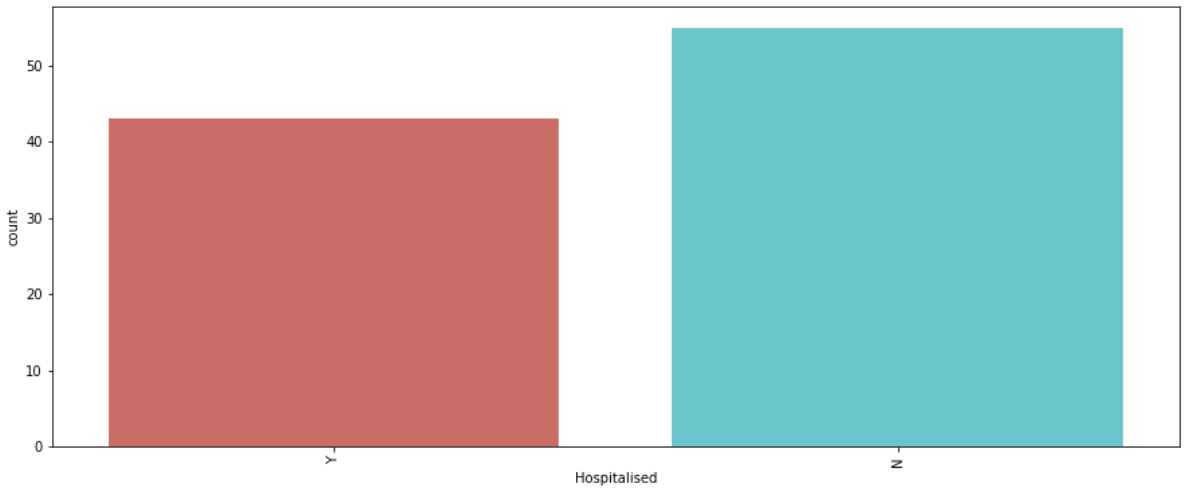
```
monkeypox_data['Hospitalised'].value_counts()
```

Out[15]:

```
N    55
Y    43
Name: Hospitalised, dtype: int64
```

In [16]:

```
plt.figure(figsize=(15,6))
sns.countplot('Hospitalised', data = monkeypox_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```



In [17]:

```
monkeypox_data['Travel_history'].unique()
```

Out[17]:

```
array(['Y', 'N', nan], dtype=object)
```

In [18]:

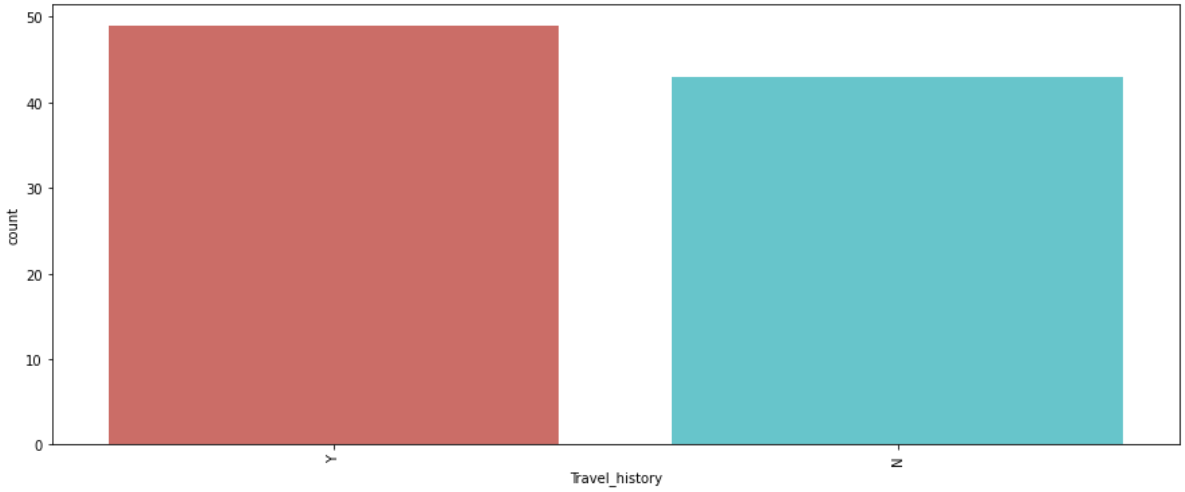
```
monkeypox_data['Travel_history'].value_counts()
```

Out[18]:

```
Y    49
N    43
Name: Travel_history, dtype: int64
```

In [19]:

```
plt.figure(figsize=(15,6))
sns.countplot('Travel_history', data = monkeypox_data, palette='hls')
plt.xticks(rotation = 90)
plt.show()
```

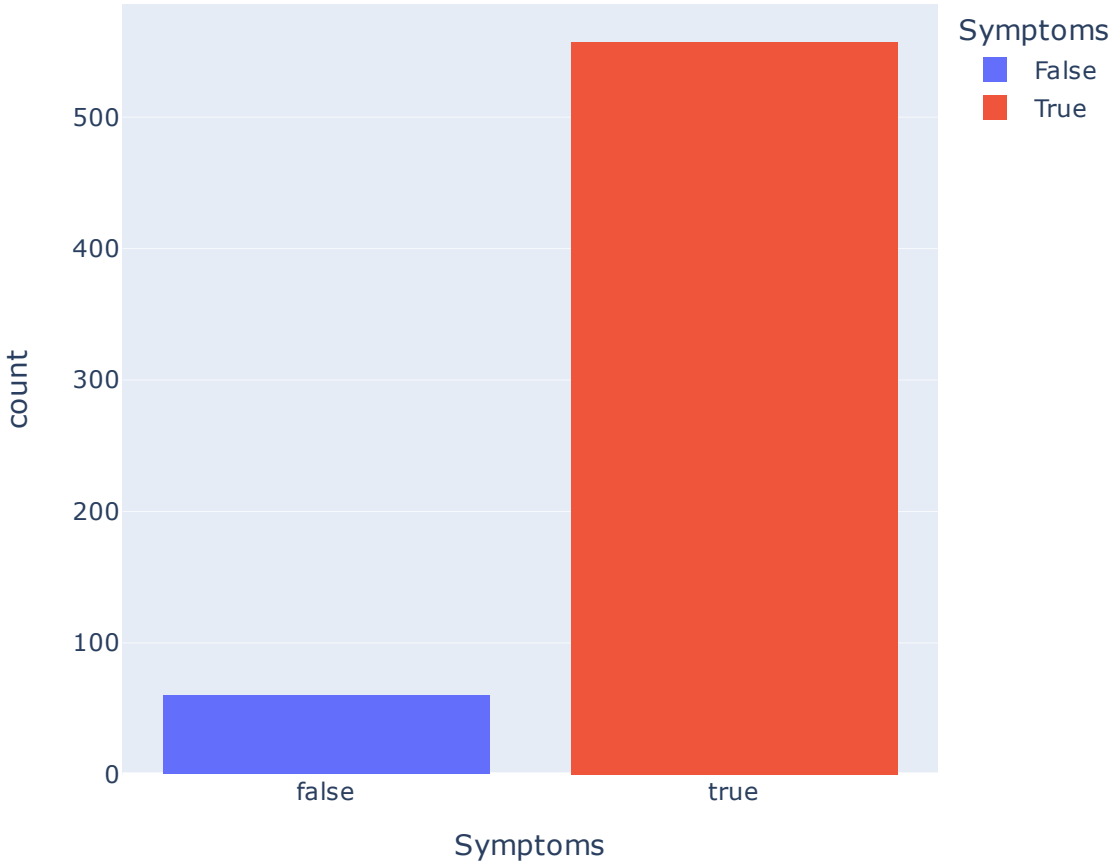


In [23]:

```
monkeypox_data_1 = pd.isnull(monkeypox_data['Symptoms'])
```

In [24]:

```
fig1 = px.histogram(monkeypox_data_1, x = 'Symptoms', color = 'Symptoms')
fig1.show()
```

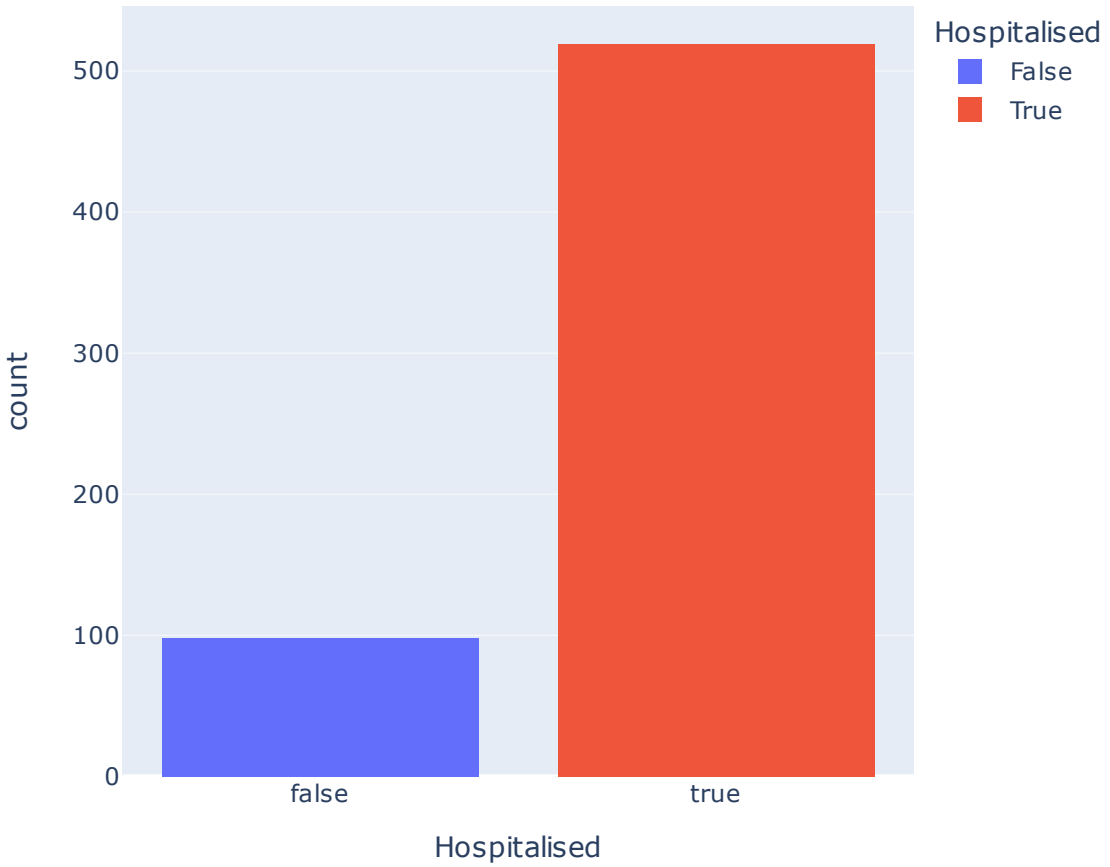


In [25]:

```
monkeypox_data_2 = pd.isnull(monkeypox_data['Hospitalised'])
```

In [27]:

```
fig2 = px.histogram(monkeypox_data_2, x = 'Hospitalised', color = 'Hospitalised')
fig2.show()
```

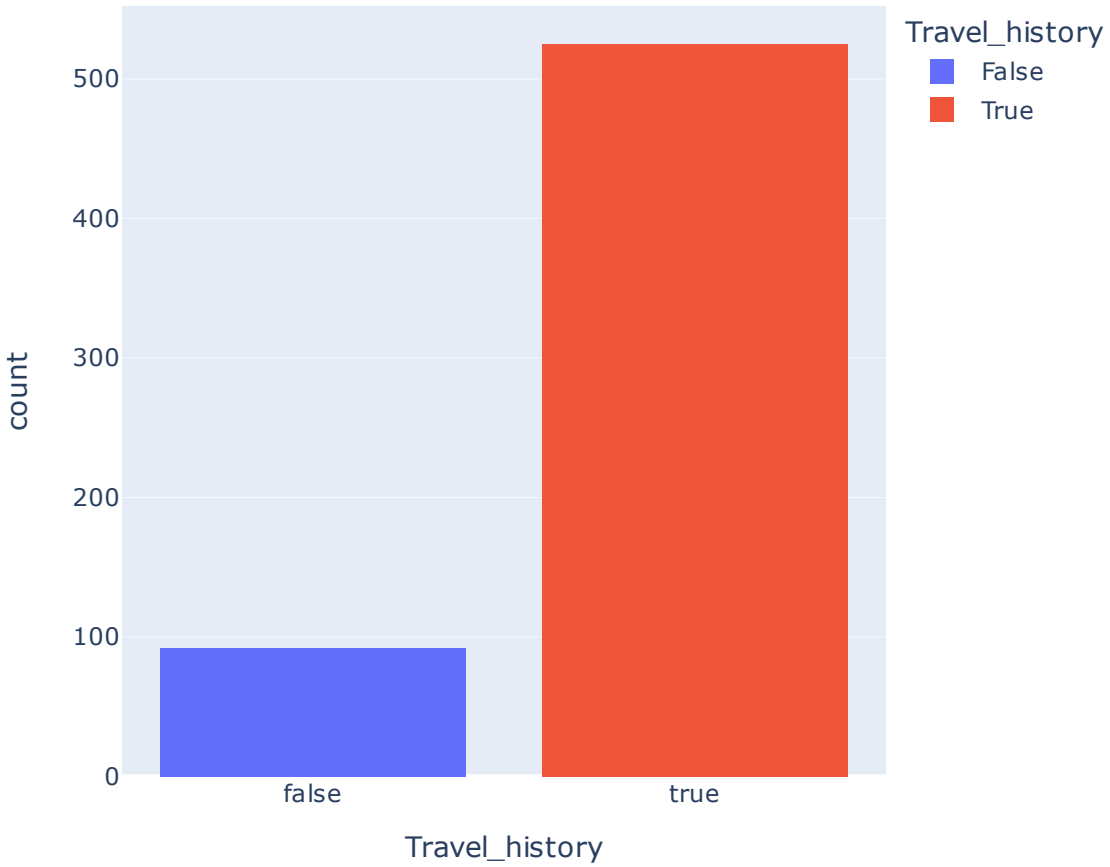


In [28]:

```
monkeypox_data_3 = pd.isnull(monkeypox_data['Travel_history'])
```

In [29]:

```
fig3 = px.histogram(monkeypox_data_3, x = 'Travel_history', color = 'Travel_history')
fig3.show()
```



In [30]:

```
monkeypox_data_cases = pd.read_csv("Monkey_Pox_Cases_Worldwide.csv")
```

In [31]:

```
monkeypox_data_cases.head()
```

Out[31]:

	Country	Confirmed_Cases	Suspected_Cases	Hospitalized	Travel_History_Yes	Travel_History_
0	England	183	0	5	2	
1	Portugal	100	0	0	0	
2	Spain	136	66	10	2	
3	United States	19	0	2	9	
4	Canada	27	36	1	0	

In [32]:

```
monkeypox_data_cases.tail()
```

Out[32]:

	Country	Confirmed_Cases	Suspected_Cases	Hospitalized	Travel_History_Yes	Travel_History
36	Peru	0	0	1	1	
37	Brazil	0	3	0	1	
38	Malaysia	0	0	0	0	
39	Hungary	1	0	0	0	
40	Norway	1	0	0	1	

In [33]:

```
monkeypox_data_cases.shape
```

Out[33]:

```
(41, 6)
```

In [34]:

```
monkeypox_data_cases.columns
```

Out[34]:

```
Index(['Country', 'Confirmed_Cases', 'Suspected_Cases', 'Hospitalized',
       'Travel_History_Yes', 'Travel_History_No'],
      dtype='object')
```

In [35]:

```
monkeypox_data_cases.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 41 entries, 0 to 40
Data columns (total 6 columns):
 #   Column              Non-Null Count  Dtype 
---  ------              --------------  ----- 
 0   Country             41 non-null     object
 1   Confirmed_Cases     41 non-null     int64 
 2   Suspected_Cases     41 non-null     int64 
 3   Hospitalized        41 non-null     int64 
 4   Travel_History_Yes  41 non-null     int64 
 5   Travel_History_No   41 non-null     int64 
dtypes: int64(5), object(1)
memory usage: 2.0+ KB
```

In [36]:

```
monkeypox_data_cases.describe()
```

Out[36]:

	Confirmed_Cases	Suspected_Cases	Hospitalized	Travel_History_Yes	Travel_History_No
count	41.000000	41.000000	41.000000	41.000000	41.000000
mean	15.048780	3.146341	1.390244	1.390244	1.048780
std	37.684182	11.577048	3.105463	2.245863	5.389579
min	0.000000	0.000000	0.000000	0.000000	0.000000
25%	0.000000	0.000000	0.000000	0.000000	0.000000
50%	2.000000	0.000000	0.000000	1.000000	0.000000
75%	5.000000	1.000000	1.000000	2.000000	0.000000
max	183.000000	66.000000	13.000000	9.000000	34.000000

In [37]:

```
monkeypox_data_cases.isnull().sum()
```

Out[37]:

```
Country               0
Confirmed_Cases       0
Suspected_Cases       0
Hospitalized          0
Travel_History_Yes    0
Travel_History_No     0
dtype: int64
```

In [38]:

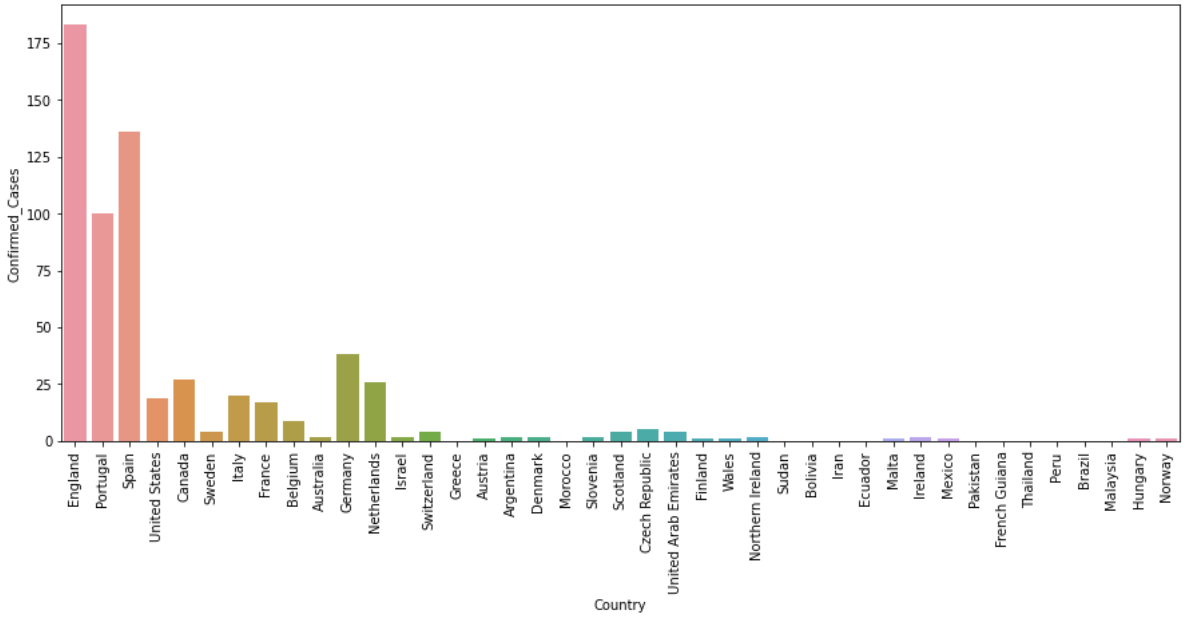
```
monkeypox_data_cases.nunique()
```

Out[38]:

```
Country               41
Confirmed_Cases       15
Suspected_Cases        8
Hospitalized           8
Travel_History_Yes     6
Travel_History_No      4
dtype: int64
```

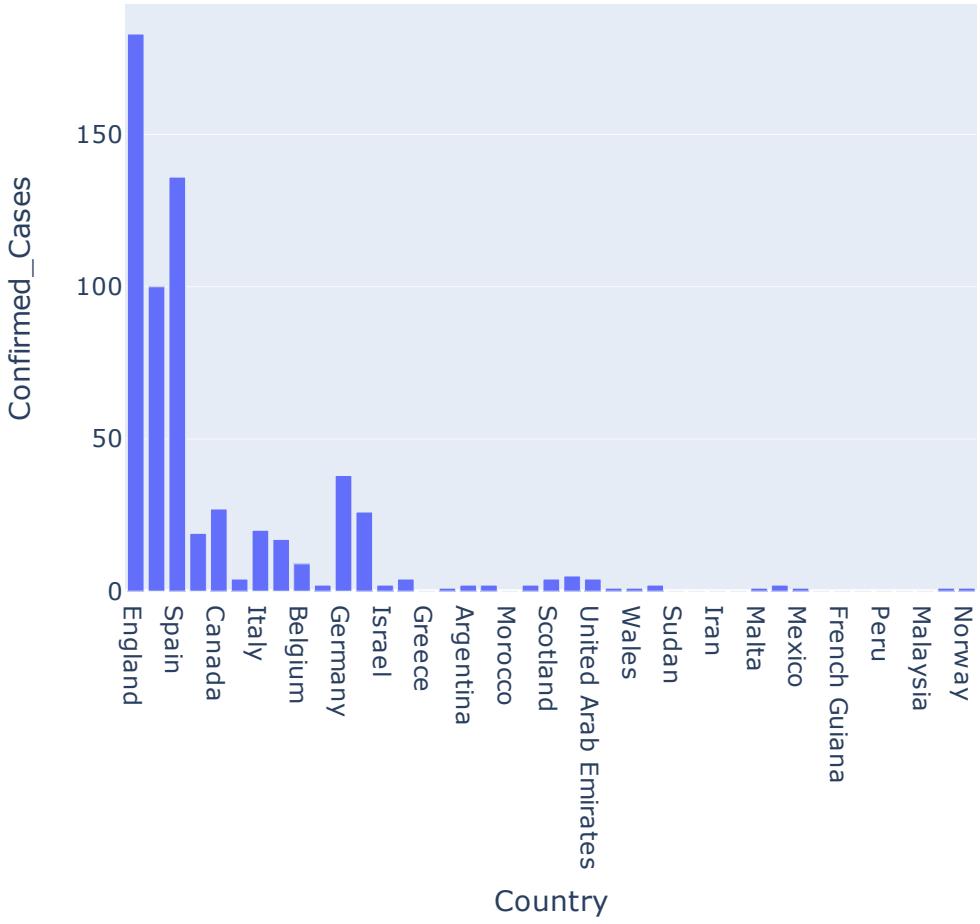
In [41]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Confirmed_Cases',
            data = monkeypox_data_cases)
plt.xticks(rotation = 90)
plt.show()
```



In [45]:

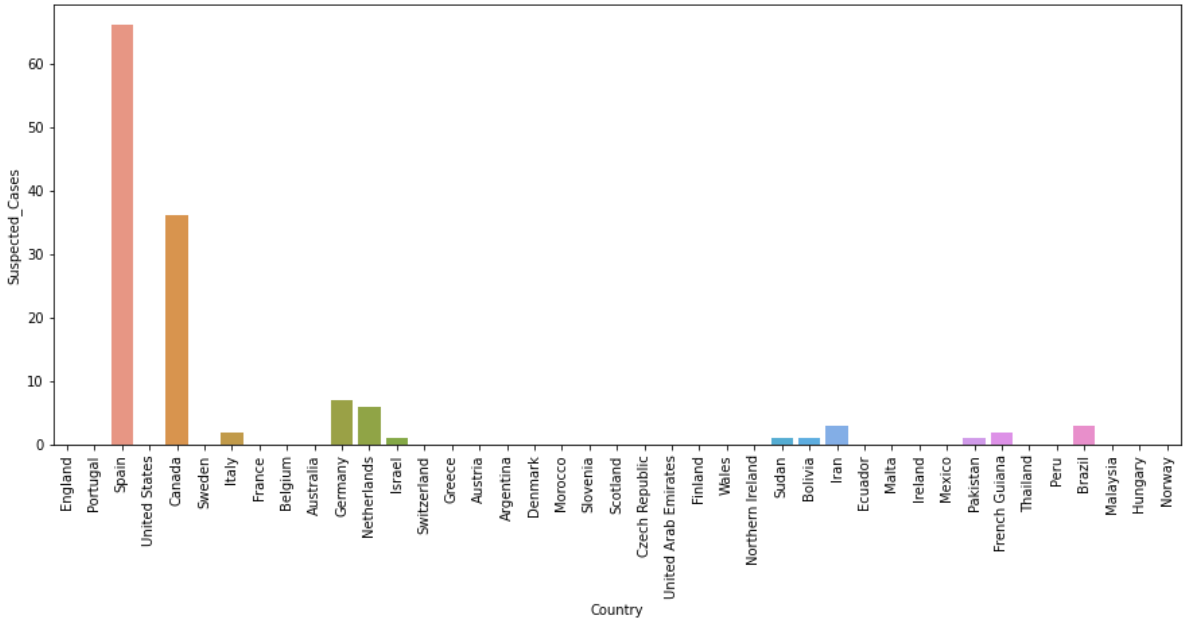
```
plt.figure(figsize=(20,8))
fig4 = px.bar(monkeypox_data_cases, x = 'Country', y = 'Confirmed_Cases')
fig4.show()
```




```
<Figure size 1440x576 with 0 Axes>
```

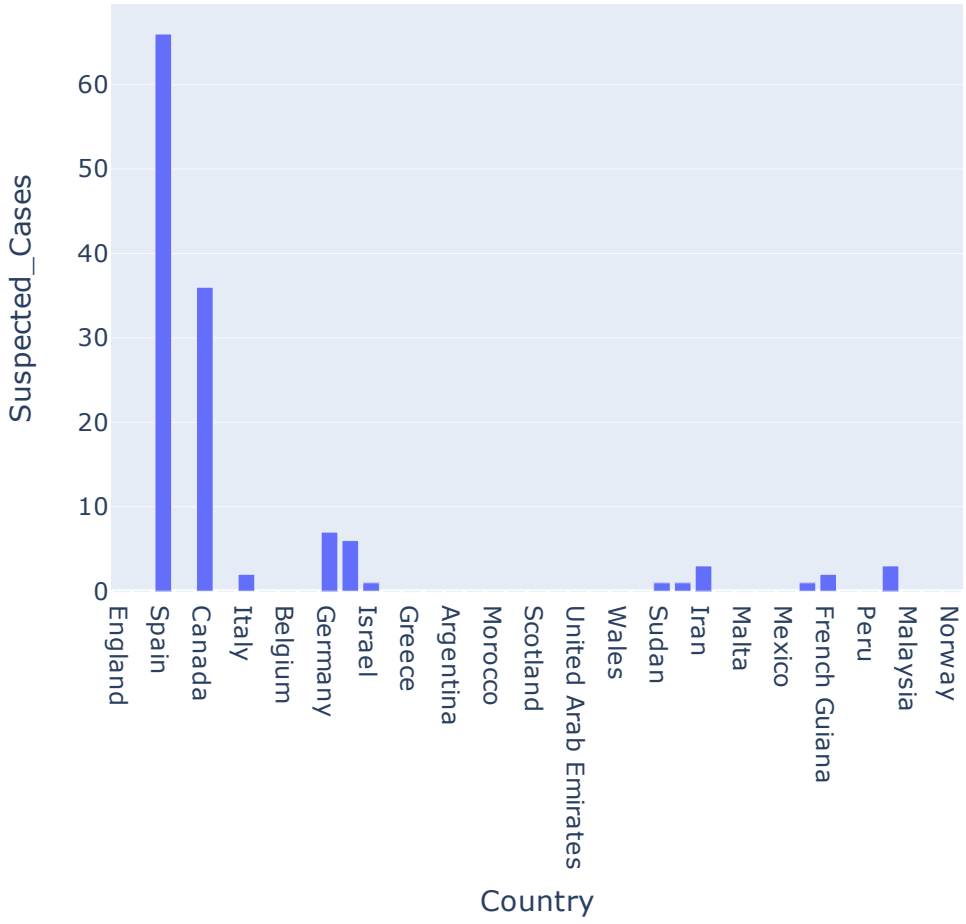
In [46]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Suspected_Cases',
            data = monkeypox_data_cases)
plt.xticks(rotation = 90)
plt.show()
```



In [47]:

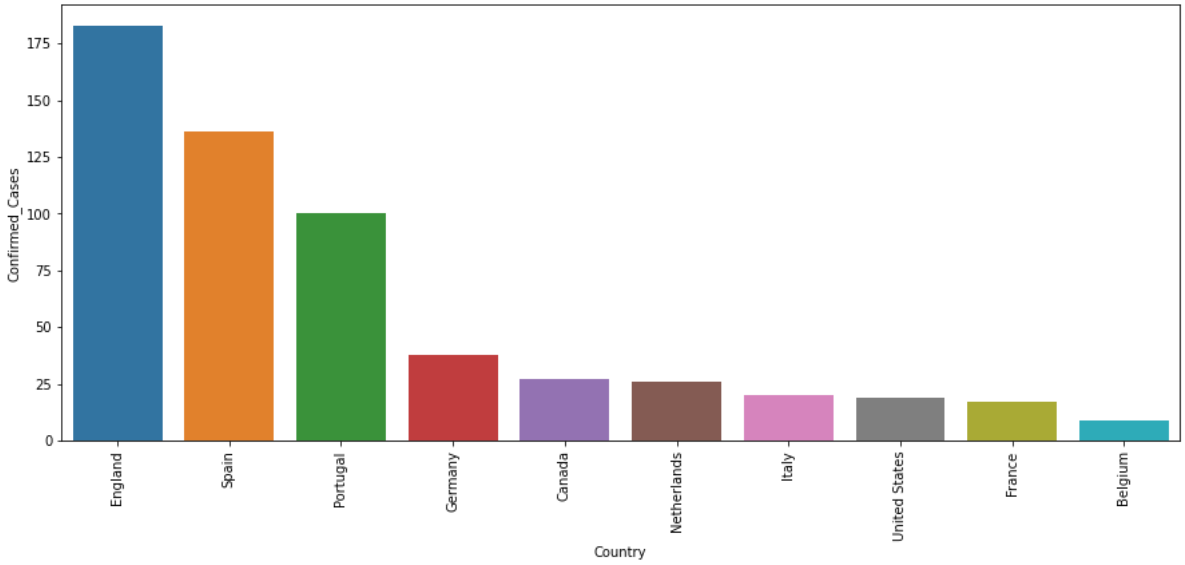
```
plt.figure(figsize=(20,8))
fig5 = px.bar(monkeypox_data_cases, x = 'Country', y = 'Suspected_Cases')
fig5.show()
```



<Figure size 1440x576 with 0 Axes>

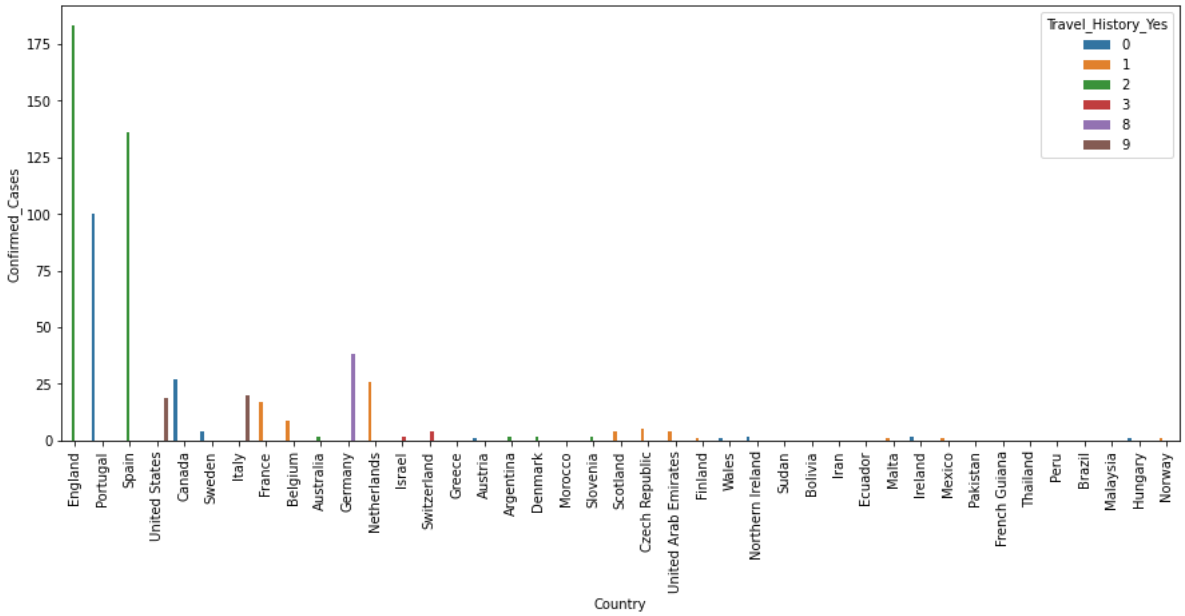
In [48]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Confirmed_Cases',
            data = monkeypox_data_cases.nlargest(10, 'Confirmed_Cases'))
plt.xticks(rotation = 90)
plt.show()
```



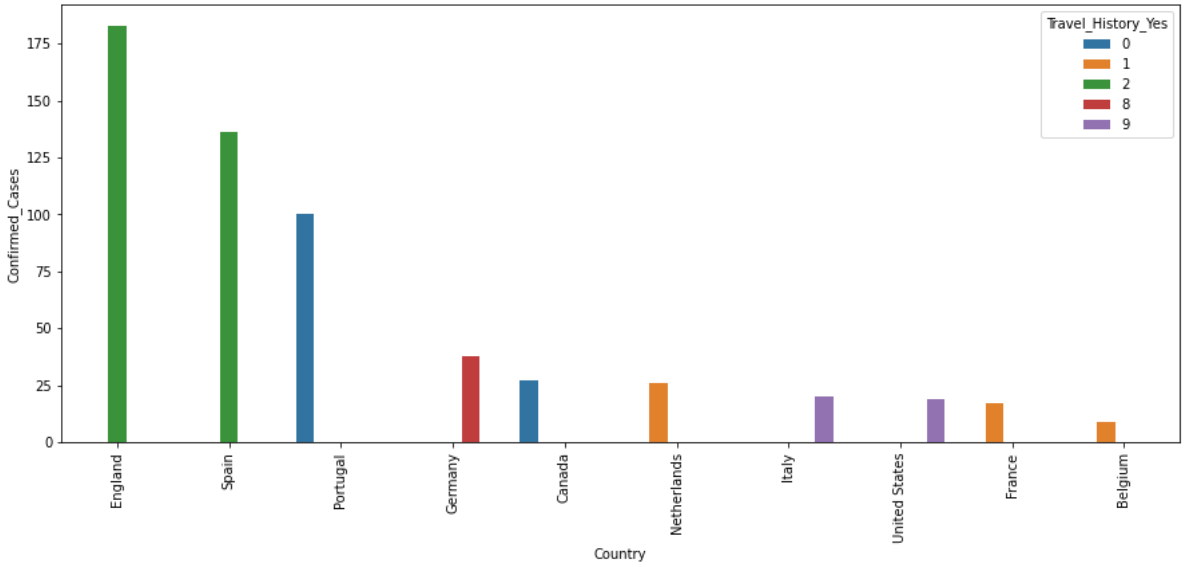
In [50]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Confirmed_Cases', hue = 'Travel_History_Yes',
            data = monkeypox_data_cases)
plt.xticks(rotation = 90)
plt.show()
```



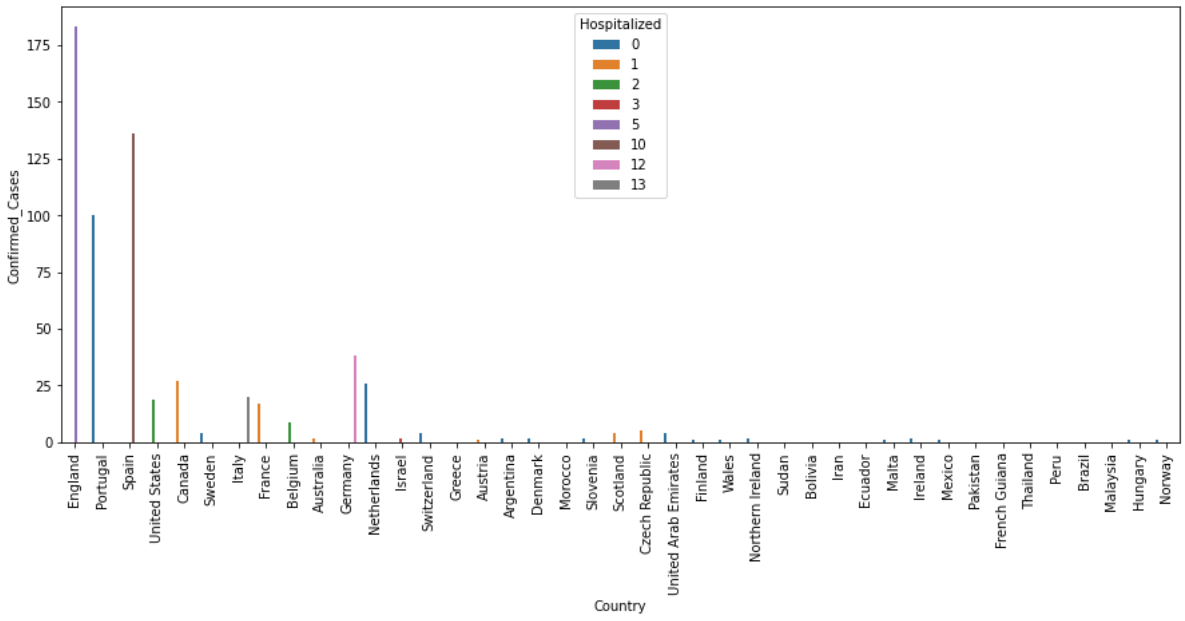
In [51]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Confirmed_Cases', hue = 'Travel_History_Yes',
            data = monkeypox_data_cases.nlargest(10, 'Confirmed_Cases'))
plt.xticks(rotation = 90)
plt.show()
```



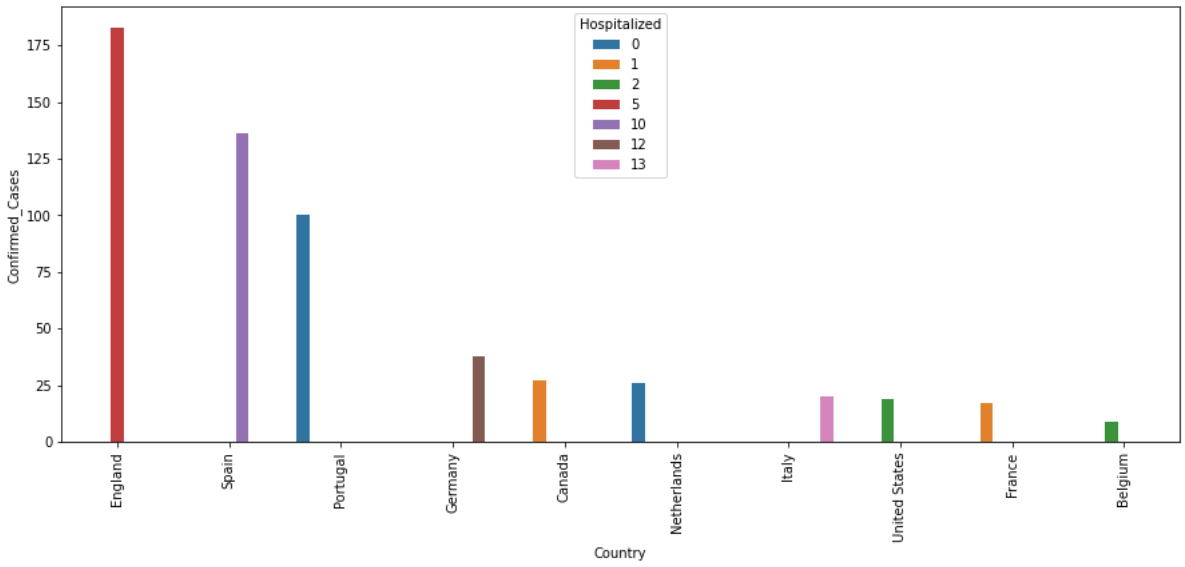
In [53]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Confirmed_Cases', hue = 'Hospitalized',
            data = monkeypox_data_cases)
plt.xticks(rotation = 90)
plt.show()
```



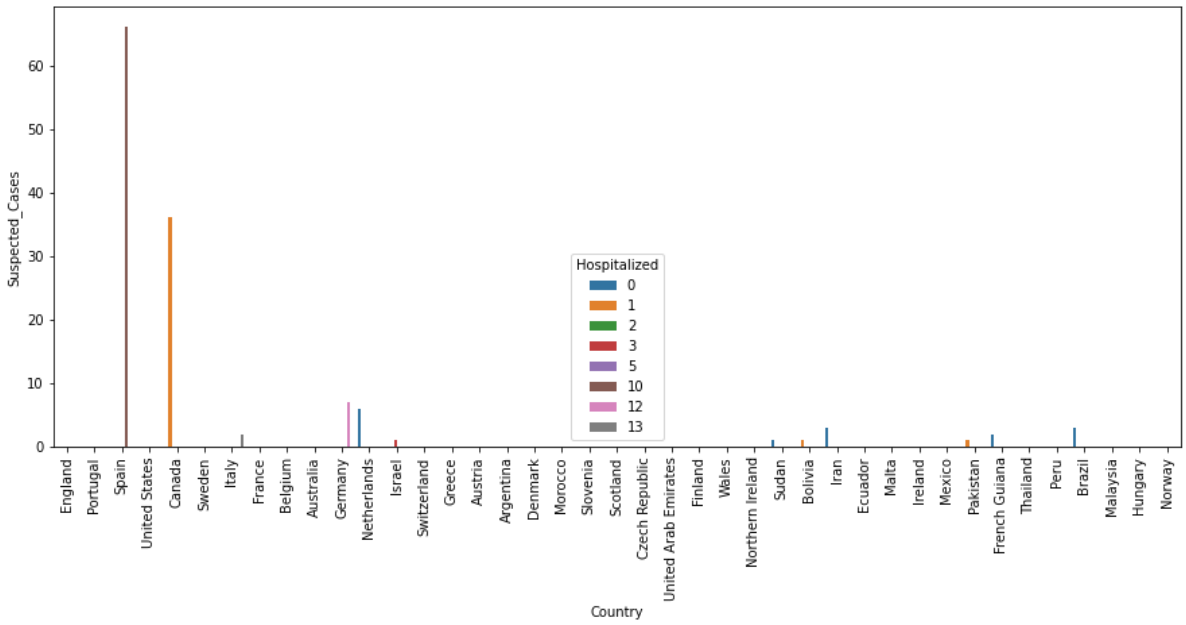
In [54]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Confirmed_Cases', hue = 'Hospitalized',
            data = monkeypox_data_cases.nlargest(10, 'Confirmed_Cases'))
plt.xticks(rotation = 90)
plt.show()
```



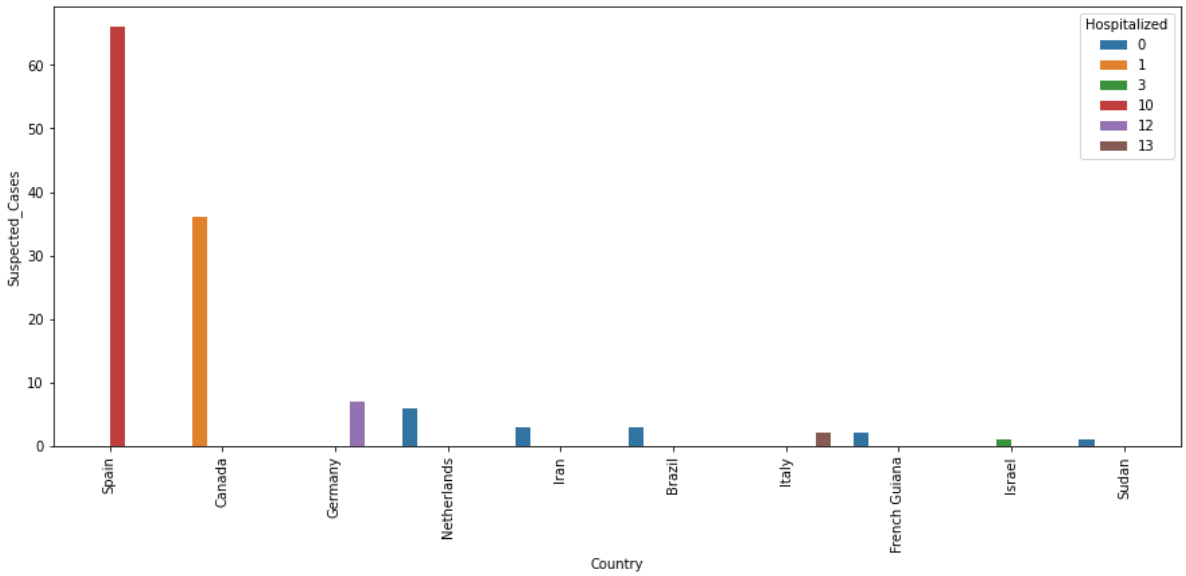
In [55]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Suspected_Cases', hue = 'Hospitalized',
            data = monkeypox_data_cases)
plt.xticks(rotation = 90)
plt.show()
```



In [56]:

```
plt.figure(figsize=(15,6))
sns.barplot(x = 'Country', y = 'Suspected_Cases', hue = 'Hospitalized',
            data = monkeypox_data_cases.nlargest(10, 'Suspected_Cases'))
plt.xticks(rotation = 90)
plt.show()
```



In [57]:

```
monkeypox_daily_cases = pd.read_csv('daily_monkeypox_cases.csv')
```

In [58]:

```
monkeypox_daily_cases.head()
```

Out[58]:

	Country	06-05-2022	12-05-2022	13-05-2022	15-05-2022	17-05-2022	18-05-2022	19-05-2022	20-05-2022	21-05-2022	23-05-2022	24-05-2022	25-05-2022	26-05-2022
0	England	1	1	1	4	0	2	0	11	0	36	14	7	24
1	Portugal	0	0	0	0	3	11	9	0	0	14	2	10	9
2	Spain	0	0	0	0	0	7	0	23	10	1	4	8	25
3	United States	0	0	0	0	0	1	0	1	0	0	0	2	5
4	Germany	0	0	0	0	0	0	1	1	2	2	6	1	2

In [59]:

```
monkeypox_daily_cases.tail()
```

Out[59]:

	Country	06-05-2022	12-05-2022	13-05-2022	15-05-2022	17-05-2022	18-05-2022	19-05-2022	20-05-2022	21-05-2022	23-05-2022	24-05-2022	25-05-2022	26-05-2022
24	Finland	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Mexico	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Malta	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Hungary	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Norway	0	0	0	0	0	0	0	0	0	0	0	0	0

In [60]:

```
monkeypox_daily_cases.shape
```

Out[60]:

```
(29, 20)
```

In [61]:

```
monkeypox_daily_cases.columns
```

Out[61]:

```
Index(['Country', '06-05-2022', '12-05-2022', '13-05-2022', '15-05-2022',
       '17-05-2022', '18-05-2022', '19-05-2022', '20-05-2022', '21-05-202
2',
       '23-05-2022', '24-05-2022', '25-05-2022', '26-05-2022', '27-05-202
2',
       '28-05-2022', '29-05-2022', '30-05-2022', '31-05-2022', '01-06-202
2'],
      dtype='object')
```

In [62]:

```
monkeypox_daily_cases.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 29 entries, 0 to 28
Data columns (total 20 columns):
 #   Column      Non-Null Count  Dtype 
---  ------      --------------  ----- 
 0   Country     29 non-null     object
 1   06-05-2022  29 non-null     int64 
 2   12-05-2022  29 non-null     int64 
 3   13-05-2022  29 non-null     int64 
 4   15-05-2022  29 non-null     int64 
 5   17-05-2022  29 non-null     int64 
 6   18-05-2022  29 non-null     int64 
 7   19-05-2022  29 non-null     int64 
 8   20-05-2022  29 non-null     int64 
 9   21-05-2022  29 non-null     int64 
 10  23-05-2022  29 non-null     int64 
 11  24-05-2022  29 non-null     int64 
 12  25-05-2022  29 non-null     int64 
 13  26-05-2022  29 non-null     int64 
 14  27-05-2022  29 non-null     int64 
 15  28-05-2022  29 non-null     int64 
 16  29-05-2022  29 non-null     int64 
 17  30-05-2022  29 non-null     int64 
 18  31-05-2022  29 non-null     int64 
 19  01-06-2022  29 non-null     int64 
dtypes: int64(19), object(1)
memory usage: 4.7+ KB
```

In [63]:

```
monkeypox_daily_cases.describe()
```

Out[63]:

	06-05-2022	12-05-2022	13-05-2022	15-05-2022	17-05-2022	18-05-2022	19-05-2022	20-05-2022
count	29.000000	29.000000	29.000000	29.000000	29.000000	29.000000	29.000000	29.000000
mean	0.034483	0.034483	0.034483	0.137931	0.103448	0.724138	0.551724	1.586207
std	0.185695	0.185695	0.185695	0.742781	0.557086	2.388911	1.702649	4.633089
min	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
25%	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
50%	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
75%	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	1.000000
max	1.000000	1.000000	1.000000	4.000000	3.000000	11.000000	9.000000	23.000000

In [64]:

```
monkeypox_daily_cases.isnull().sum()
```

Out[64]:

```
Country       0
06-05-2022    0
12-05-2022    0
13-05-2022    0
15-05-2022    0
17-05-2022    0
18-05-2022    0
19-05-2022    0
20-05-2022    0
21-05-2022    0
23-05-2022    0
24-05-2022    0
25-05-2022    0
26-05-2022    0
27-05-2022    0
28-05-2022    0
29-05-2022    0
30-05-2022    0
31-05-2022    0
01-06-2022    0
dtype: int64
```

In [65]:

```
monkeypox_daily_cases.nunique()
```

Out[65]:

```
Country       29
06-05-2022     2
12-05-2022     2
13-05-2022     2
15-05-2022     2
17-05-2022     2
18-05-2022     5
19-05-2022     4
20-05-2022     6
21-05-2022     4
23-05-2022     7
24-05-2022     6
25-05-2022     8
26-05-2022    10
27-05-2022     7
28-05-2022     4
29-05-2022     5
30-05-2022     7
31-05-2022     8
01-06-2022     2
dtype: int64
```

In [67]:

```
monkeypox_daily_cases['26-05-2022'].unique()
```

Out[67]:

```
array([24,  9, 25,  5,  2,  0,  3, 11,  1,  4], dtype=int64)
```

In [68]:

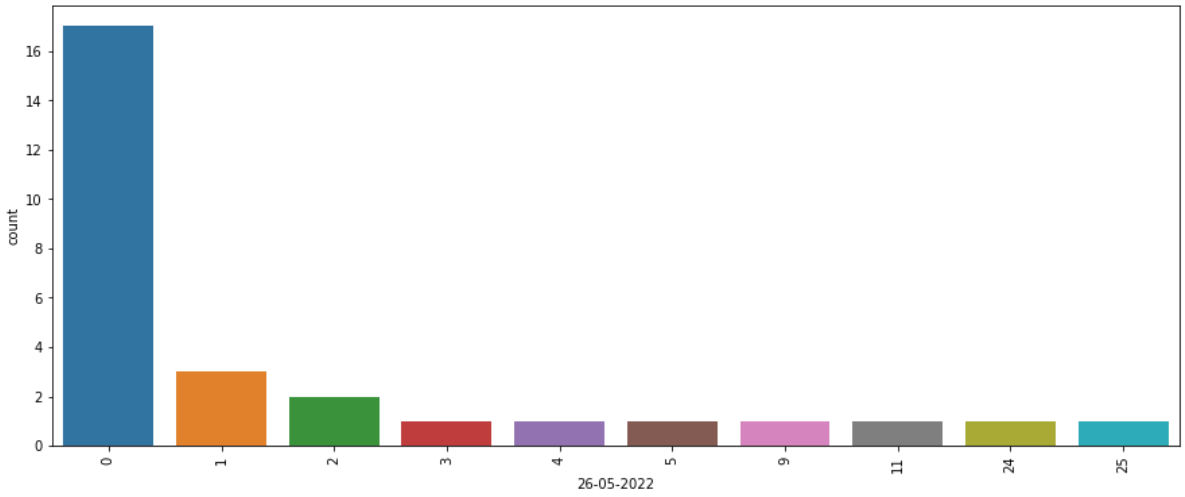
```
monkeypox_daily_cases['26-05-2022'].value_counts()
```

Out[68]:

```
0     17
1      3
2      2
24     1
9      1
25     1
5      1
3      1
11     1
4      1
Name: 26-05-2022, dtype: int64
```

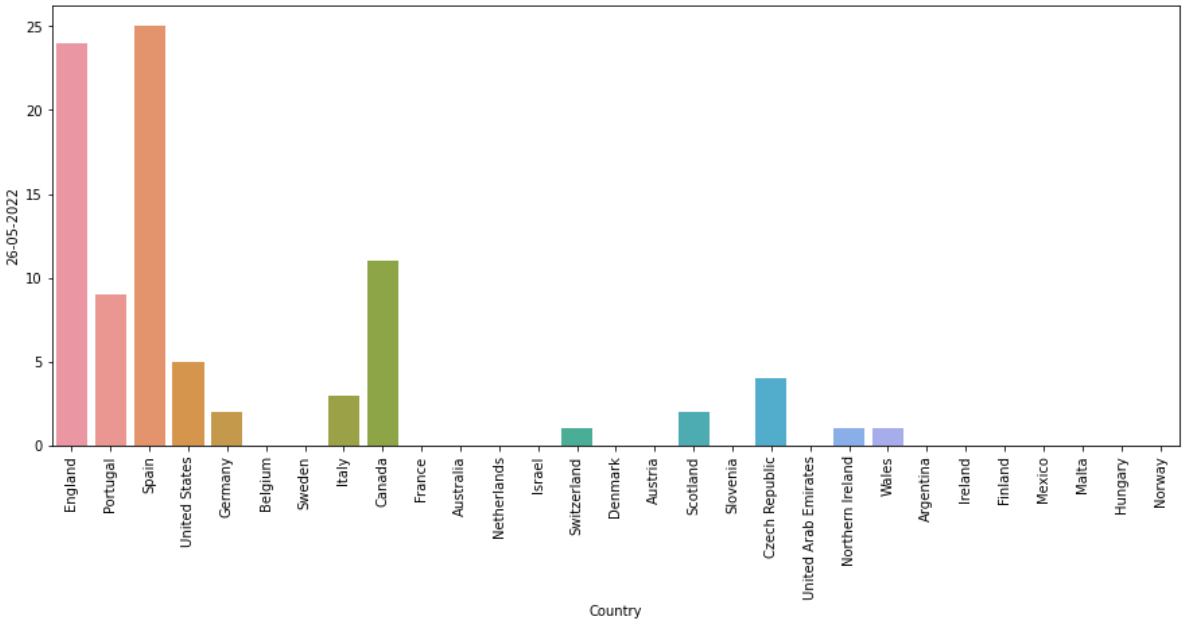
In [66]:

```
plt.figure(figsize=(15,6))
sns.countplot(x = '26-05-2022', data = monkeypox_daily_cases)
plt.xticks(rotation = 90)
plt.show()
```



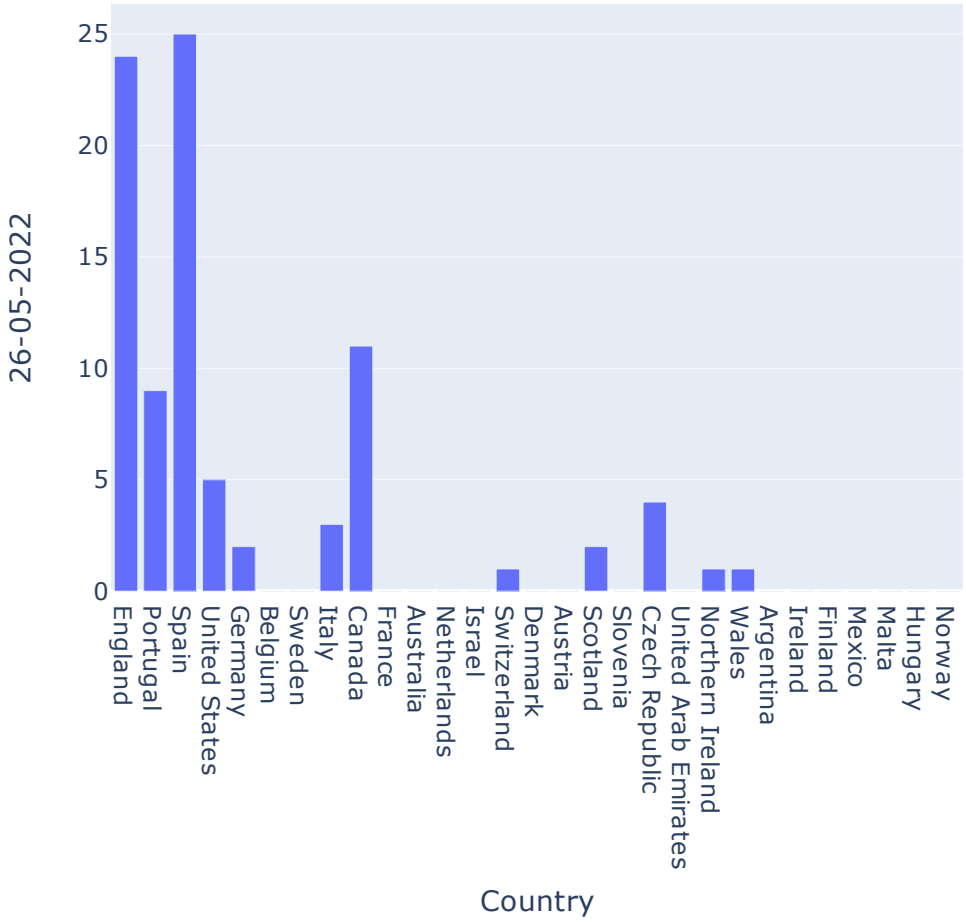
In [70]:

```
plt.figure(figsize=(15,6))
sns.barplot(y = '26-05-2022', x = 'Country', data = monkeypox_daily_cases)
plt.xticks(rotation = 90)
plt.show()
```



In [71]:

```
plt.figure(figsize=(20,8))
fig6 = px.bar(monkeypox_daily_cases, x = 'Country', y = '26-05-2022')
fig6.show()
```



<Figure size 1440x576 with 0 Axes>