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

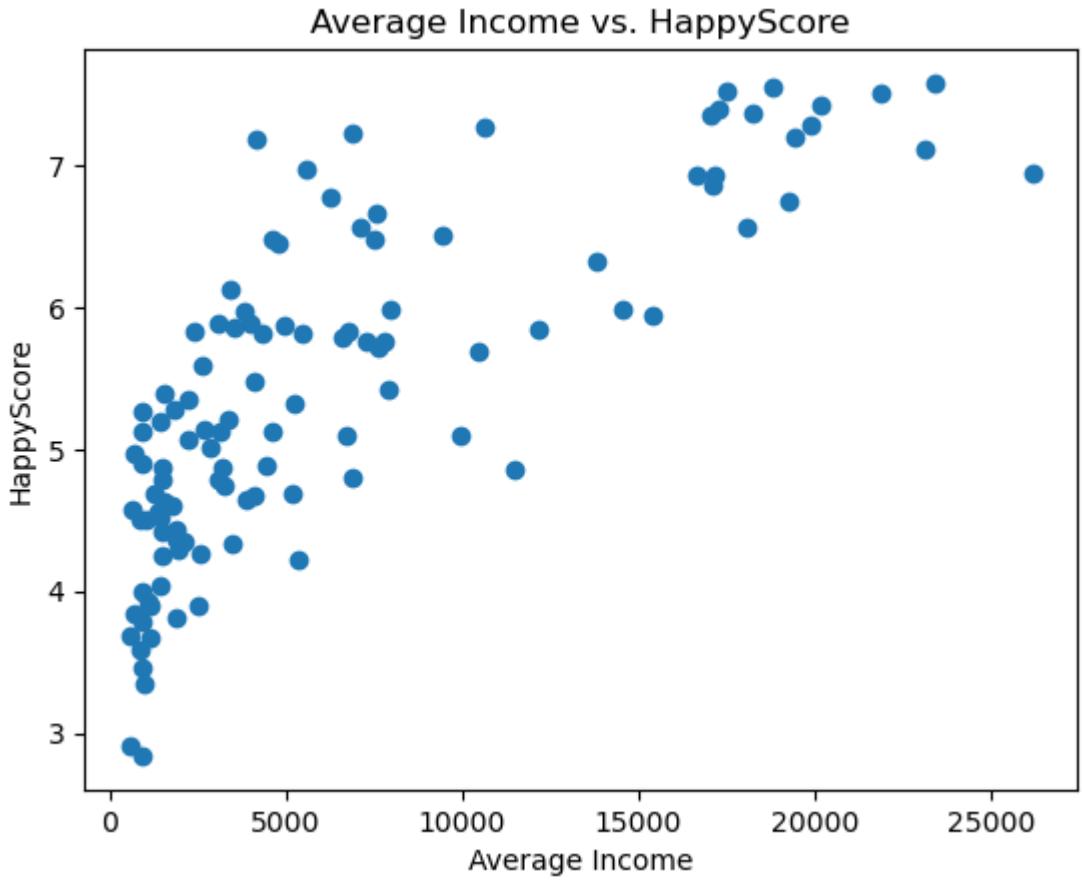
In [2]:
```
df=pd.read_csv('happyscore_income.csv')
```

In [3]:
```
df.head()
```

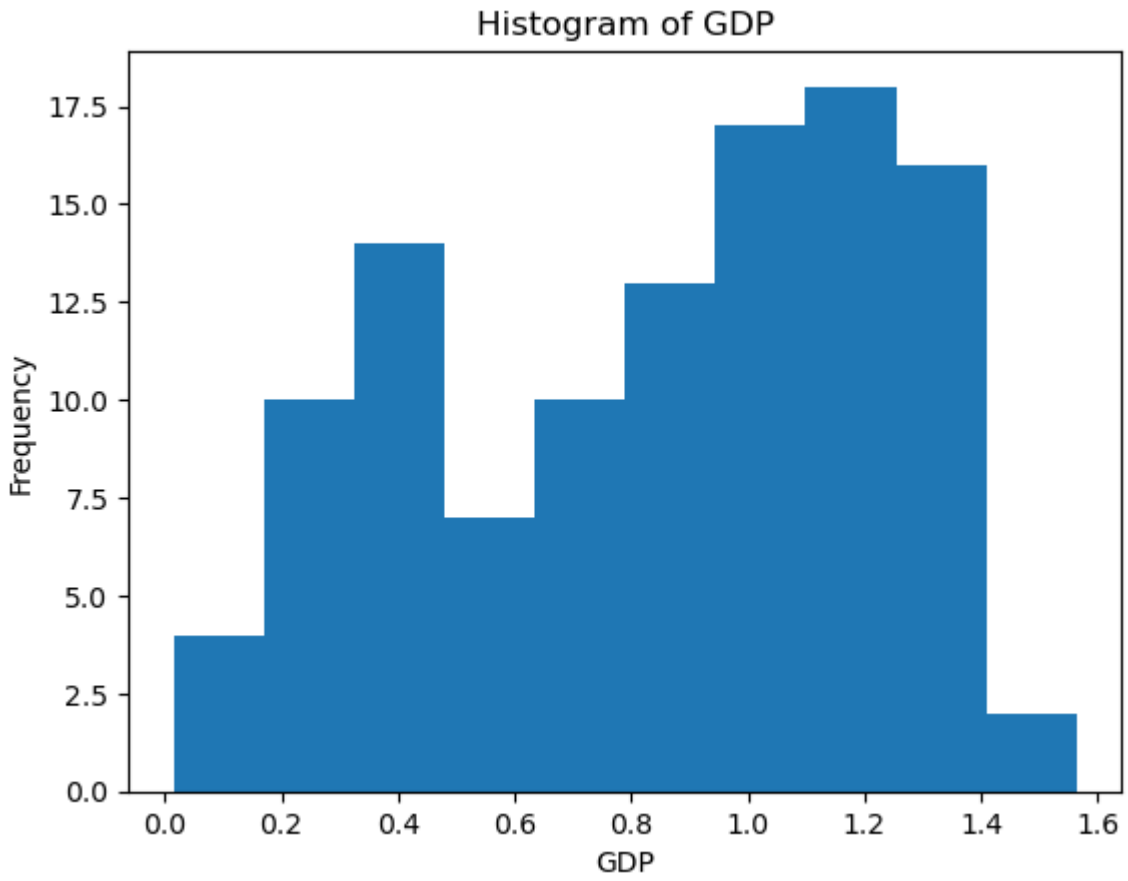
Out[3]:

	country	adjusted_satisfaction	avg_satisfaction	std_satisfaction	avg_income	median_income	inco
0	Armenia	37	4.9	2.42	2096.76	1731.506667	
1	Angola	26	4.3	3.19	1448.88	1044.240000	
2	Argentina	60	7.1	1.91	7101.12	5109.400000	
3	Austria	59	7.2	2.11	19457.04	16879.620000	
4	Australia	65	7.6	1.80	19917.00	15846.060000	

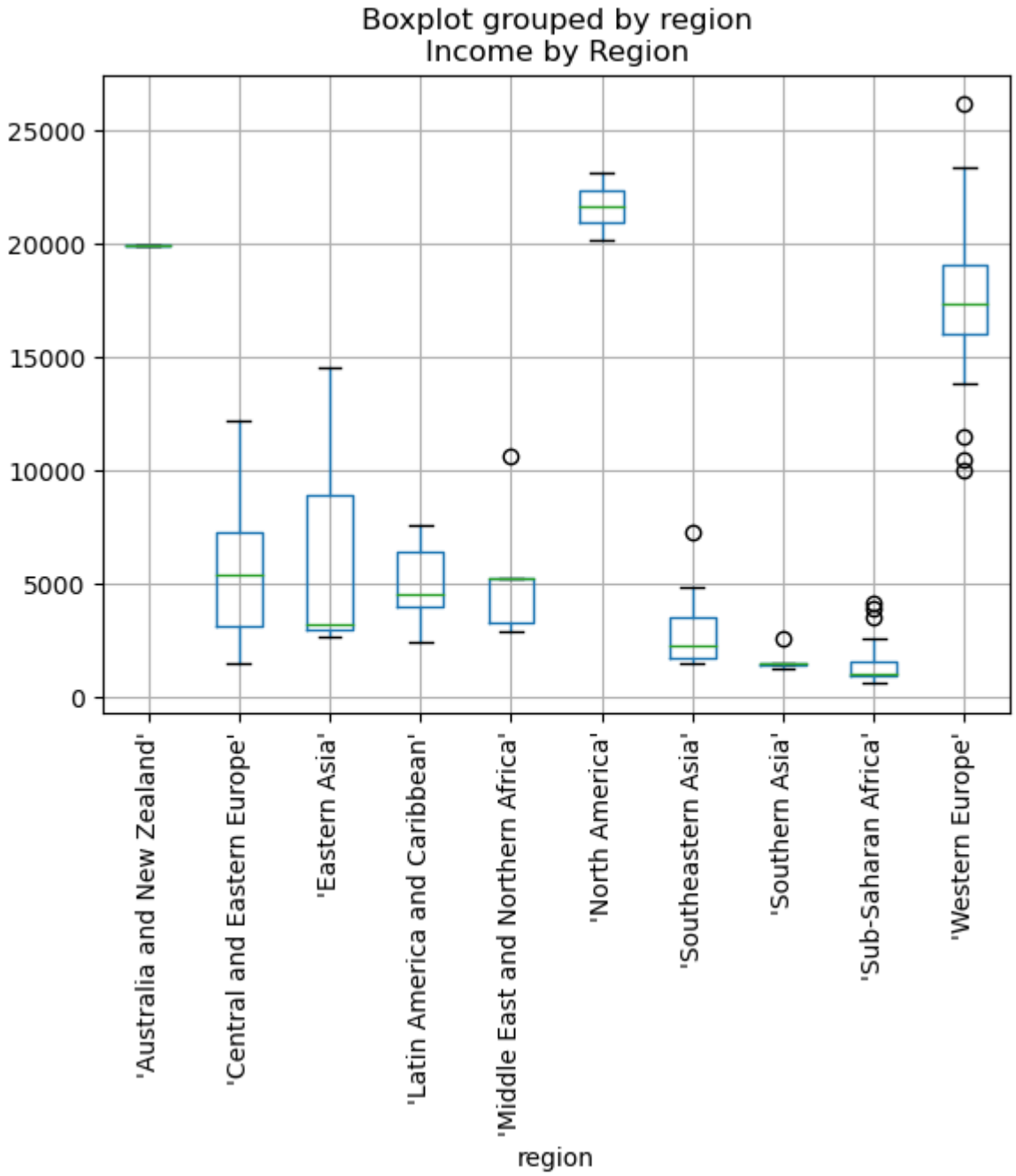
In [4]:
```
# Create a scatter plot of Average Income vs. HappyScore
plt.scatter(df['avg_income'], df['happyScore'])
plt.xlabel('Average Income')
plt.ylabel('HappyScore')
plt.title('Average Income vs. HappyScore')
plt.show()
```



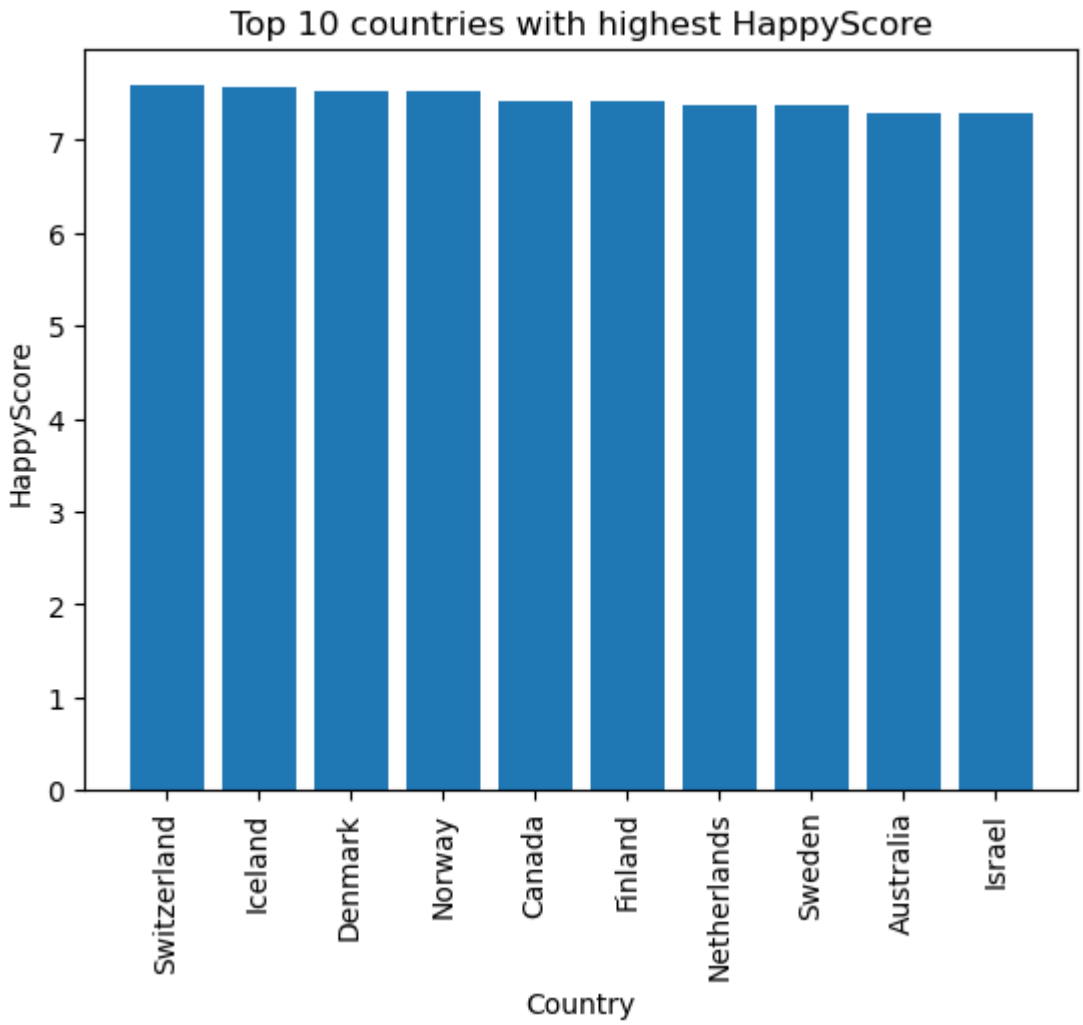
In [5]:
```
# Create a histogram of GDP
plt.hist(df['GDP'])
plt.xlabel('GDP')
plt.ylabel('Frequency')
plt.title('Histogram of GDP')
plt.show()
```



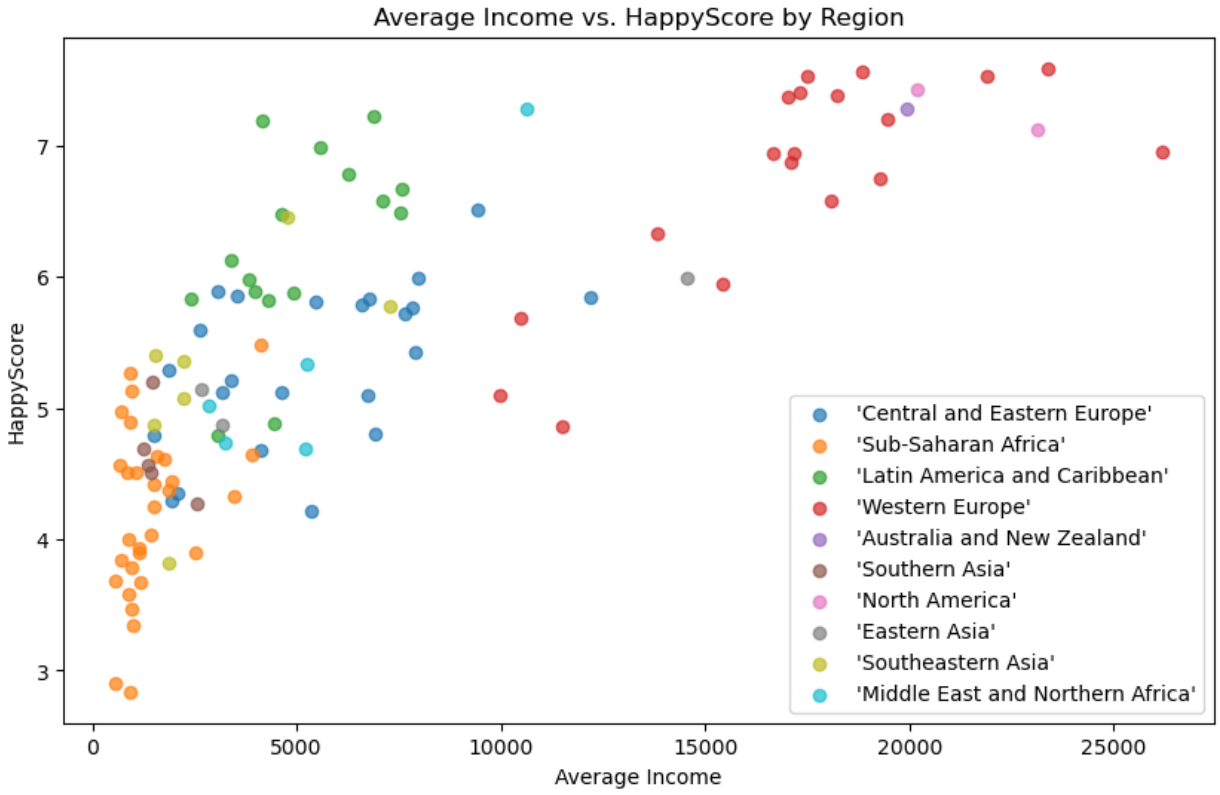
In [6]:
```
# Create a box plot of Income by Region
df.boxplot(column='avg_income', by='region')
plt.xticks(rotation=90)
plt.title('Income by Region')
plt.show()
```



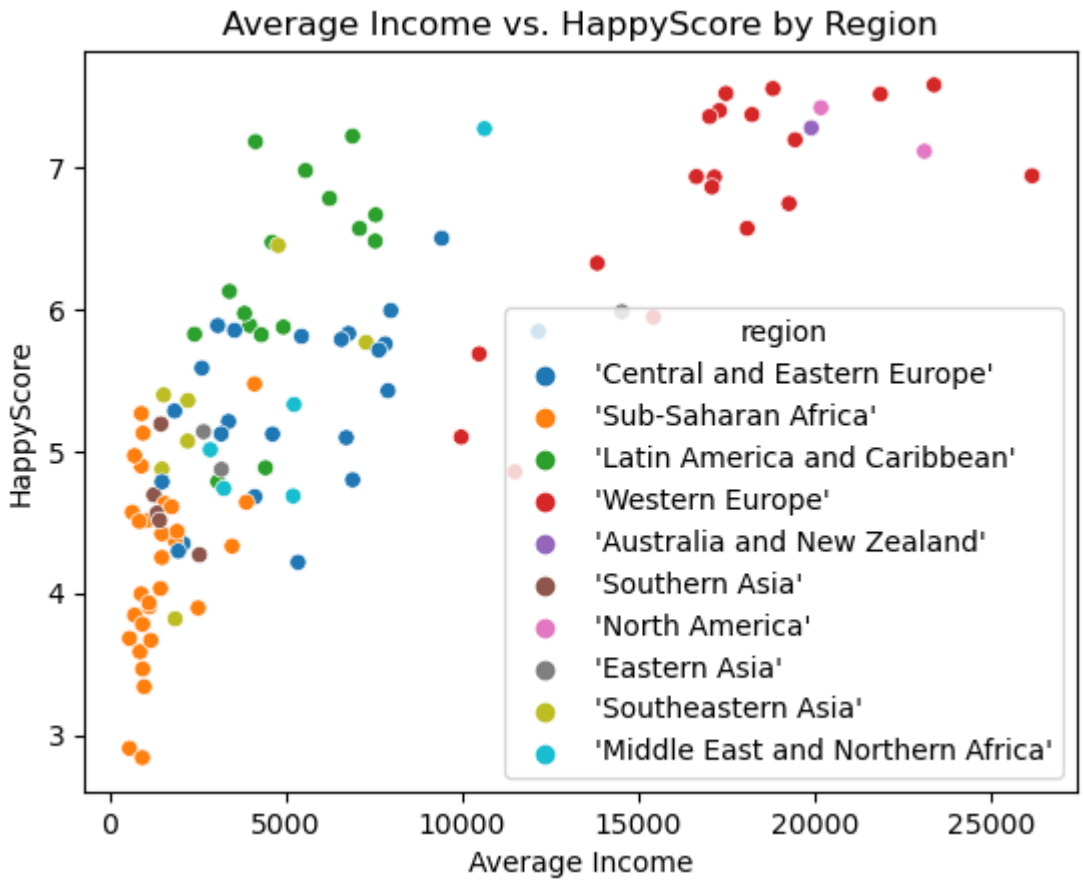
In [7]:
```
# Create a bar plot of the top 10 countries with highest HappyScore
top_happy = df.sort_values('happyScore', ascending=False).head(10)
plt.bar(top_happy['country'], top_happy['happyScore'])
plt.xticks(rotation=90)
plt.xlabel('Country')
plt.ylabel('HappyScore')
plt.title('Top 10 countries with highest HappyScore')
plt.show()
```



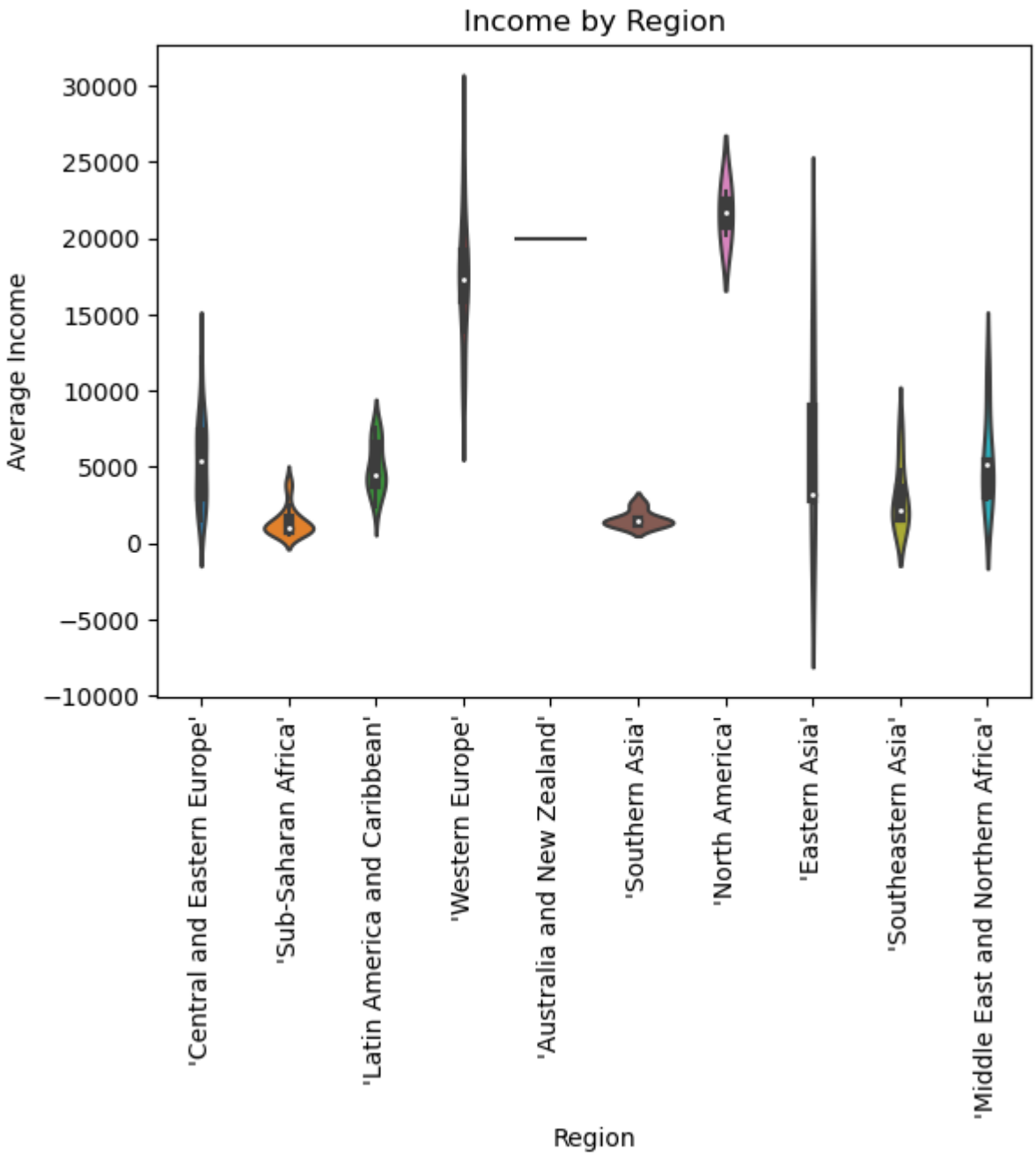
In [12]:
```
# Create a scatter plot of Income vs. HappyScore with region coloring by matplotlib
fig, ax = plt.subplots(figsize=(10, 6))
for region in df['region'].unique():
    region_df = df[df['region'] == region]
    ax.scatter(region_df['avg_income'], region_df['happyScore'], label=region, alpha=0
ax.set_xlabel('Average Income')
ax.set_ylabel('HappyScore')
ax.set_title('Average Income vs. HappyScore by Region')
ax.legend()
plt.show()
```



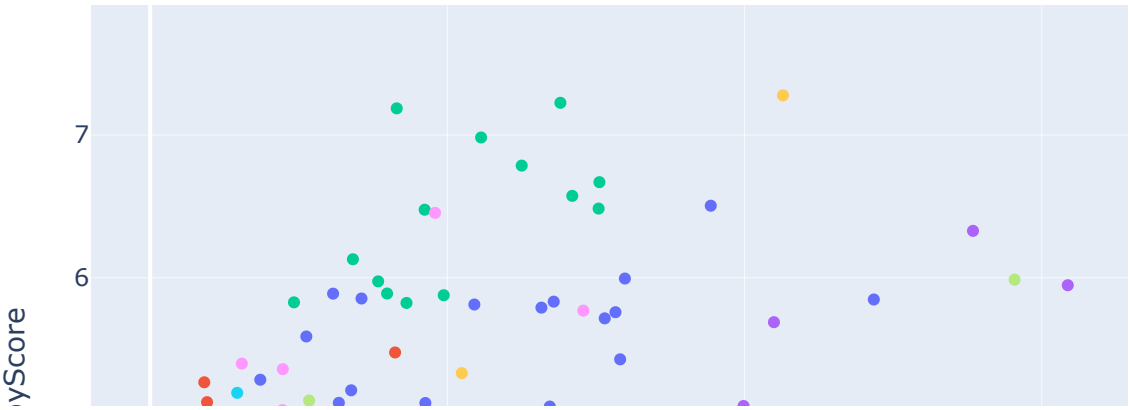
In [8]:
```
# Create a scatter plot of Income vs. HappyScore with region coloring
sns.scatterplot(data=df, x='avg_income', y='happyScore', hue='region')
plt.xlabel('Average Income')
plt.ylabel('HappyScore')
plt.title('Average Income vs. HappyScore by Region')
plt.show()
```



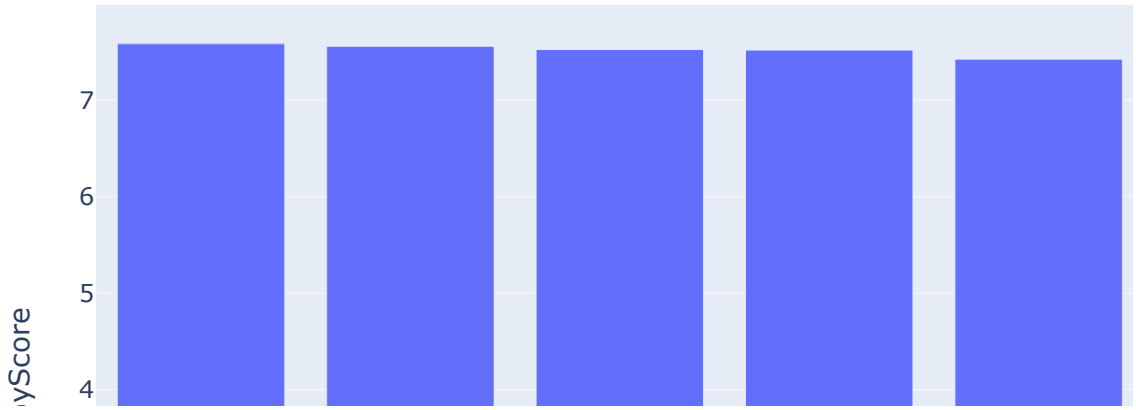
In [9]:
```
# Create a violin plot of Income by Region
sns.violinplot(data=df, x='region', y='avg_income')
plt.xticks(rotation=90)
plt.xlabel('Region')
plt.ylabel('Average Income')
plt.title('Income by Region')
plt.show()
```



In [10]:
```
import plotly.express as px
# Create a scatter plot of Income vs. HappyScore with region coloring
fig = px.scatter(df, x='avg_income', y='happyScore', color='region', hover_name='count
fig.update_layout(title='Average Income vs. HappyScore by Region')
fig.show()
```



In [11]:
```
# Create a bar plot of the top 10 countries with highest HappyScore
fig = px.bar(df.sort_values('happyScore', ascending=False).head(10), x='country', y='h
fig.update_layout(title='Top 10 countries with highest HappyScore')
fig.show()
```


Top 10 countries with highest HappyScore
yScore
7
6
5
4