Importing the necessary libraries

In [3]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline
```

inspecting the dataset

In [4]:
```
df=pd.read_csv('youtubers_df.csv')
df.head()
```

Out[4]:

	Rank	Username	Categories	Suscribers	Country	Visits	Likes	Comments	
0	1	tseries	Música y baile	249500000.0	India	86200.0	2700.0	78.0	http://yout
1	2	MrBeast	Videojuegos, Humor	183500000.0	Estados Unidos	117400000.0	5300000.0	18500.0	http://youtube.
2	3	CoComelon	Educación	165500000.0	Unknown	7000000.0	24700.0	0.0	http://youtub
3	4	SETIndia	NaN	162600000.0	India	15600.0	166.0	9.0	http://youtube
4	5	KidsDianaShow	Animación, Juguetes	113500000.0	Unknown	3900000.0	12400.0	0.0	http://youtu

In [5]:
```
df.shape
```

Out[5]:
```
(1000, 9)
```

In [6]:
```
df.dtypes
```

Out[6]:
```
Rank            int64
Username       object
Categories     object
Suscribers    float64
Country        object
Visits        float64
Likes         float64
Comments      float64
Links          object
dtype: object
```

In [7]:
```
df.describe()
```

Out[7]:

	Rank	Suscribers	Visits	Likes	Comments
count	1000.000000	1.000000e+03	1.000000e+03	1.000000e+03	1000.000000
mean	500.500000	2.189440e+07	1.209446e+06	5.363259e+04	1288.768000
std	288.819436	1.682775e+07	5.229942e+06	2.580457e+05	6778.188308
min	1.000000	1.170000e+07	0.000000e+00	0.000000e+00	0.000000
25%	250.750000	1.380000e+07	3.197500e+04	4.717500e+02	2.000000
50%	500.500000	1.675000e+07	1.744500e+05	3.500000e+03	67.000000
75%	750.250000	2.370000e+07	8.654750e+05	2.865000e+04	472.000000
max	1000.000000	2.495000e+08	1.174000e+08	5.300000e+06	154000.000000

Cleaning data

removing columns that we are not going to use

In [8]:
```
df.drop(['Links','Rank'],axis=1,inplace=True)
```

adding a column that contains the continent of each country

In [9]:
```
continent_dict = {
    'India': 'Asia',
    'Estados Unidos': 'North America',
    'Brasil': 'South America',
    'México': 'North America',
    'Rusia': 'Europe/Asia',  # Russia lies in both continents
    'Pakistán': 'Asia',
    'Indonesia': 'Asia',
    'Francia': 'Europe',
    'Colombia': 'South America',
    'Iraq': 'Asia',
    'Filipinas': 'Asia',
    'Argentina': 'South America',
    'Turquía': 'Europe/Asia',  # Turkey lies in both continents
    'Tailandia': 'Asia',
    'Arabia Saudita': 'Asia',
    'Bangladesh': 'Asia',
    'Reino Unido': 'Europe',
    'Perú': 'South America',
    'España': 'Europe',
    'Egipto': 'Africa',
    'Jordania': 'Asia',
    'Marruecos': 'Africa',
    'Singapur': 'Asia',
    'Argelia': 'Africa',
    'Japón': 'Asia',
    'Somalia': 'Africa'
}

# Add the continent column based on the dictionary
df['Continent'] = df['Country'].map(continent_dict)
```

Translating the value of countries to English

In [10]:
```
Country_translations = {
    'India': 'India',  # Assuming it's already in English
    'Estados Unidos': 'United States',
    'Brasil': 'Brazil',
    'México': 'Mexico',
    'Rusia': 'Russia',
    'Pakistán': 'Pakistan',
    'Indonesia': 'Indonesia',
    'Francia': 'France',
    'Colombia': 'Colombia',
    'Iraq': 'Iraq',
    'Filipinas': 'Philippines',
    'Argentina': 'Argentina',
    'Turquía': 'Turkey',
    'Tailandia': 'Thailand',
```

```
    'Arabia Saudita': 'Saudi Arabia',
    'Bangladesh': 'Bangladesh',
    'Reino Unido': 'United Kingdom',
    'Perú': 'Peru',
    'España': 'Spain',
    'Egipto': 'Egypt',
    'Jordania': 'Jordan',
    'Marruecos': 'Morocco',
    'Singapur': 'Singapore',
    'Argelia': 'Algeria',
    'Japón': 'Japan',
    'Somalia': 'Somalia'
}

# Replace country values with translations based on the dictionary
df['Country'] = df['Country'].replace(Country_translations)
```

Translating Categories to English

In [11]:

```
Categories_translation = {
     'Música y baile': 'Music and Dance',
    'Videojuegos, Humor': 'Video Games, Humor',
    'Películas, Videojuegos': 'Movies, Video Games',
    'Videojuegos': 'Video Games',
    'Películas, Animación': 'Movies, Animation',
    'Películas': 'Movies',
    'Noticias y Política': 'News and Politics',
    'Animación, Humor': 'Animation, Humor',
    'Música y baile, Animación': 'Music and Dance, Animation',
    'Música y baile, Películas': 'Music and Dance, Movies',
    'Películas, Humor': 'Movies, Humor',
    'Vlogs diarios': 'Daily Vlogs',
    'Animación, Videojuegos': 'Animation, Video Games',
    'Animación': 'Animation',
    'Música y baile, Humor': 'Music and Dance, Humor',
    'Diseño/arte, DIY y Life Hacks': 'Design/Art, DIY and Life Hacks',
    'Ciencia y tecnología': 'Science and Technology',
    'Fitness, Salud y autoayuda': 'Fitness, Health and Self-Help',
    'Belleza, Moda': 'Beauty, Fashion',
    'Videojuegos, Juguetes': 'Video Games, Toys',
    'Humor': 'Humor',
    'Educación': 'Education',
    'Comida y bebida': 'Food and Drink',
    'Deportes': 'Sports',
    'Fitness': 'Fitness',
    'Viajes, Espectáculos': 'Travel, Shows',
    'Comida y bebida, Salud y autoayuda': 'Food and Drink, Health and Self-Help',
    'Diseño/arte': 'Design/Art',
    'DIY y Life Hacks, Juguetes': 'DIY and Life Hacks, Toys',
    'Animação, Juguetes': 'Animation, Toys',
    'Juguetes': 'Toys',
    'Animales y mascotas': 'Animals and Pets',
    'ASMR': 'ASMR',
    'Moda': 'Fashion',
    'DIY y Life Hacks': 'DIY and Life Hacks',
    'Diseño/arte, Belleza': 'Design/Art, Beauty',
    'Coches y vehículos': 'Cars and Vehicles',
    'Animación, Humor, Juguetes': 'Animation, Humor, Toys',
    'ASMR, Comida y bebida': 'ASMR, Food and Drink',
    'Juguetes, DIY y Life Hacks': 'Toys, DIY and Life Hacks'
}
df['Categories'] = df['Categories'].replace(Categories_translation)
```

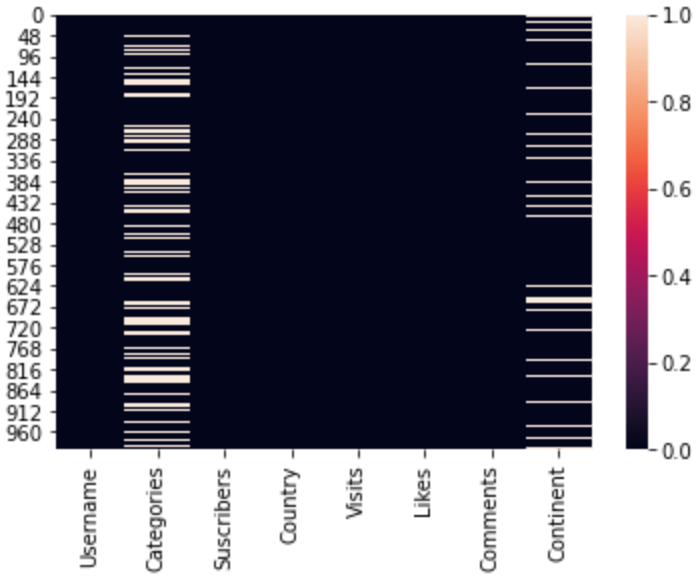
Dealing with null values

In [12]:
```
df.isnull().sum()
```

Out[12]:
```
Username        0
Categories    306
Suscribers      0
Country         0
Visits          0
Likes           0
Comments        0
Continent     173
dtype: int64
```

In [13]:
```
sns.heatmap(df.isnull())
```

Out[13]:
```
<AxesSubplot:>
```



In [14]:
```
df.dropna(inplace=True)
```

Dealing with duplicate values

In [15]:
```
df.duplicated().any()
```

Out[15]:
```
True
```

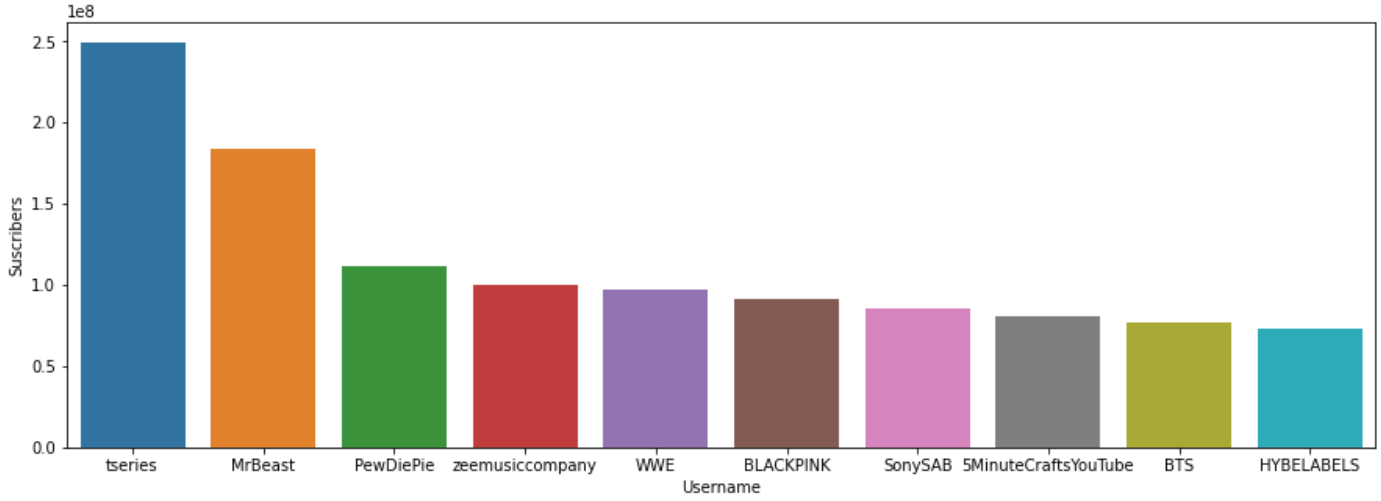
In [16]:
```
df=df.drop_duplicates()
```

Exploratory Data Analysis

Top 10 streamers according to nuber of subscribers

In [17]:
```
top_10_subs=df.sort_values(by='Suscribers',ascending=False).head(10)
plt.figure(figsize=(15,5))
sns.barplot(x='Username',y='Suscribers',data=top_10_subs)
```

Out[17]:
```
<AxesSubplot:xlabel='Username', ylabel='Suscribers'>
```

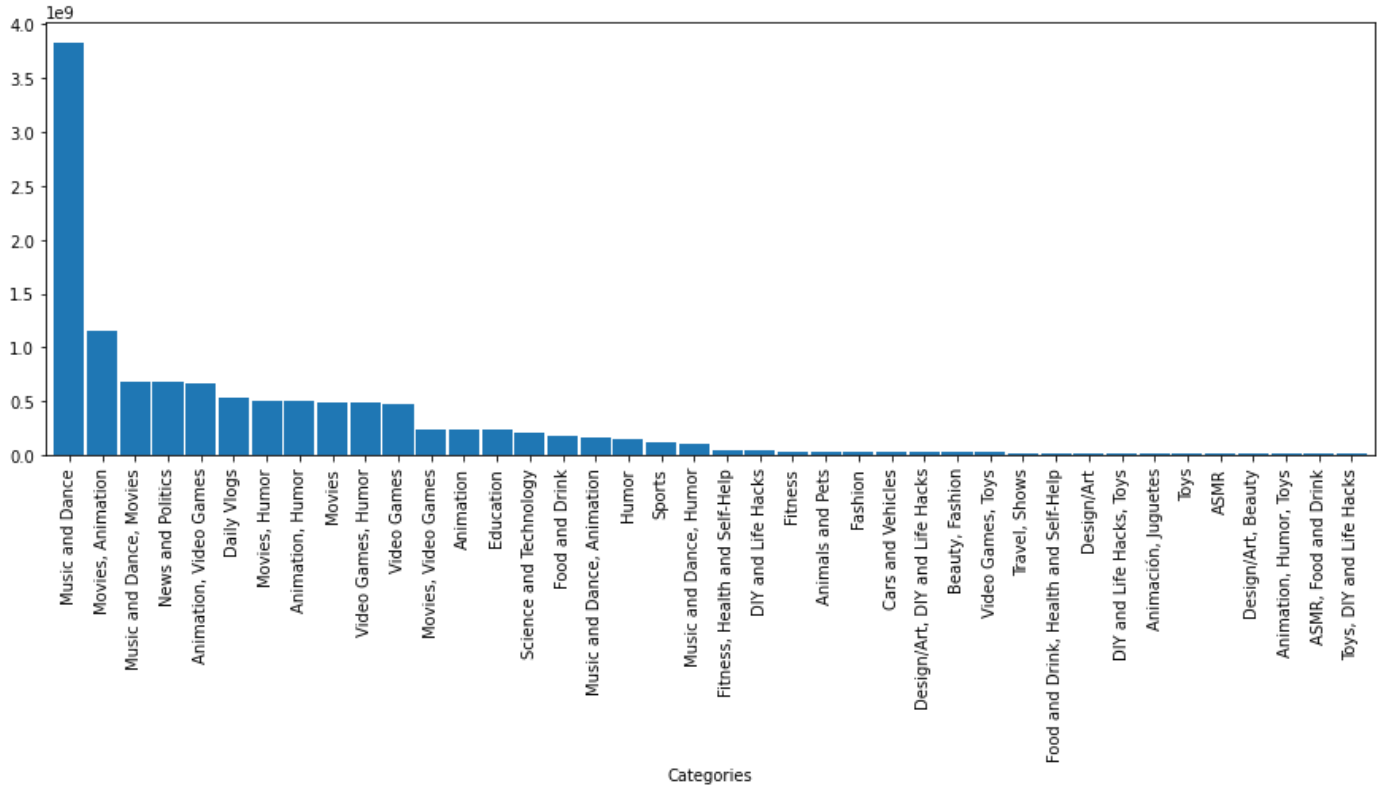


tseries is the highest channel according to subscribers

The number of subscribers according to each category

In [18]:
```
df.groupby('Categories')['Suscribers'].sum().sort_values(ascending=False).plot(kind='bar
```

Out[18]:
```
<AxesSubplot:xlabel='Categories'>
```



Music and dance is the category with the highest number of subscribers

Which Country has the largest number of streamers?

replacing the unkown country with the most common value

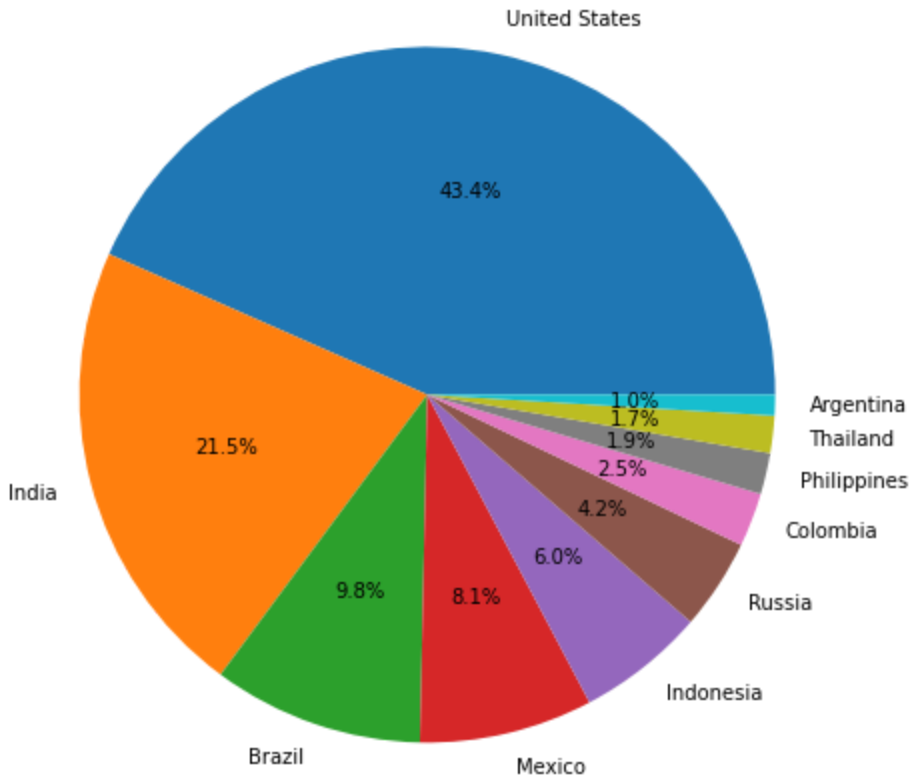
In [19]:
```
mode_value = df['Country'].mode()[0]
df['Country'].replace('Unknown',mode_value,inplace=True)
```

In [20]:
```
top_10_countries=df['Country'].value_counts().sort_values(ascending=False).head(10)
```

```
plt.figure(figsize=(8, 8))
plt.pie(top_10_countries, labels=top_10_countries.index, autopct="%1.1f%%")
```

Out[20]:

```
([<matplotlib.patches.Wedge at 0x1216cdab0d0>,
  <matplotlib.patches.Wedge at 0x1216cdab8e0>,
  <matplotlib.patches.Wedge at 0x1216cdabfd0>,
  <matplotlib.patches.Wedge at 0x1216cdb7760>,
  <matplotlib.patches.Wedge at 0x1216cdb7e80>,
  <matplotlib.patches.Wedge at 0x1216cdc35e0>,
  <matplotlib.patches.Wedge at 0x1216cdc3d00>,
  <matplotlib.patches.Wedge at 0x1216cdd0490>,
  <matplotlib.patches.Wedge at 0x1216cdd0bb0>,
  <matplotlib.patches.Wedge at 0x1216cddc310>],
 [Text(0.22718881766217502, 1.076283067380168, 'United States'),
  Text(-1.0632303759246071, -0.2820304375616554, 'India'),
  Text(-0.35502249250027507, -1.0411335312143646, 'Brazil'),
  Text(0.2530797728566719, -1.070490835351156, 'Mexico'),
  Text(0.685097655310029, -0.8606051374984354, 'Indonesia'),
  Text(0.9207876116218665, -0.6017891443717632, 'Russia'),
  Text(1.0264225463746015, -0.3955461493857313, 'Colombia'),
  Text(1.071248970108307, -0.24985124382698512, 'Philippines'),
  Text(1.0927886005620238, -0.12575004764092143, 'Thailand'),
  Text(1.0995000854443517, -0.033159645774095074, 'Argentina')],
 [Text(0.12392117327027727, 0.5870634912982734, '43.4%'),
  Text(-0.579943841413422, -0.1538347841245393, '21.5%'),
  Text(-0.1936486322728773, -0.567891017026017, '9.8%'),
  Text(0.13804351246727556, -0.5839040920097214, '8.1%'),
  Text(0.37368963016910667, -0.4694209840900556, '6.0%'),
  Text(0.5022477881573817, -0.32824862420277995, '4.2%'),
  Text(0.5598668434770553, -0.21575244511948977, '2.5%'),
  Text(0.5843176200590765, -0.13628249663290096, '1.9%'),
  Text(0.5960665093974674, -0.06859093507686623, '1.7%'),
  Text(0.5997273193332827, -0.018087079513142767, '1.0%')])
```

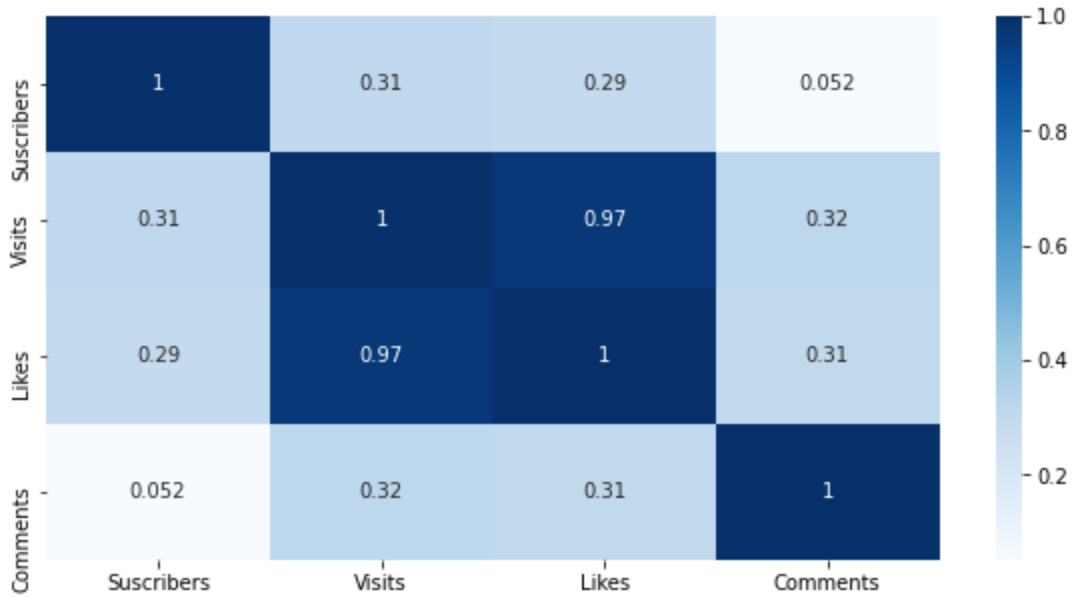


USA is the country with most streamers

Exploring corelations

In [21]:
```
plt.figure(figsize=(10,5))
sns.heatmap(df.corr(),cmap="Blues",annot=True)
```

Out[21]:
```
<AxesSubplot:>
```



As the streamer gets more views, the number of likes he gets increases

Is there a relationship between the number of streamers in a country and the average number of views per streamer in that country?

In [22]:
```
correlation = df.groupby('Country')['Visits'].mean().corr(df.groupby('Country')['Usernam
correlation
```

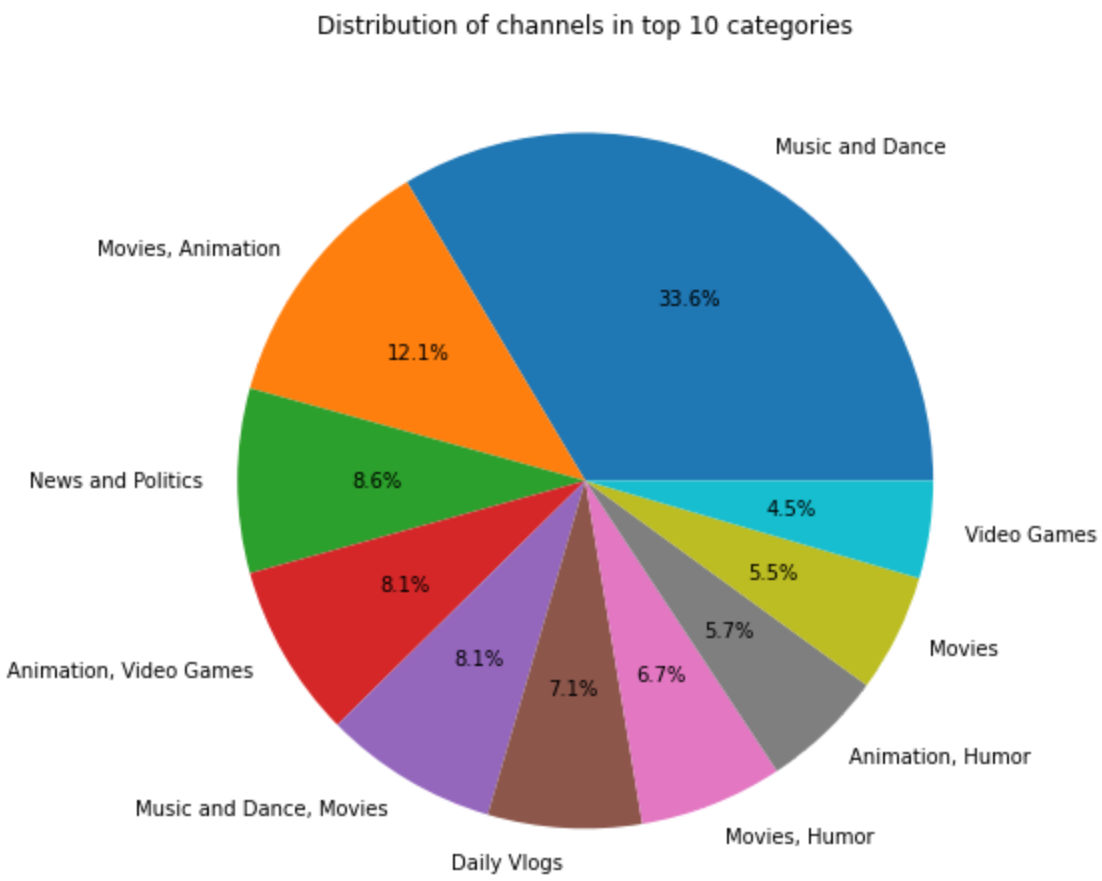
Out[22]:
```
0.1751022416511797
```

The results showed a weak positive correlation, indicating a slight tendency for countries with more streamers to also have a higher average viewership per streamer.

Distribution of channels in top 10 categories

In [23]:
```
top_10_categories=df['Categories'].value_counts().sort_values(ascending=False).head(10)
plt.figure(figsize=(8, 8))
plt.pie(top_10_categories, labels=top_10_categories.index, autopct="%1.1f%%")
plt.title('Distribution of channels in top 10 categories')
```

Out[23]:
```
Text(0.5, 1.0, 'Distribution of channels in top 10 categories')
```

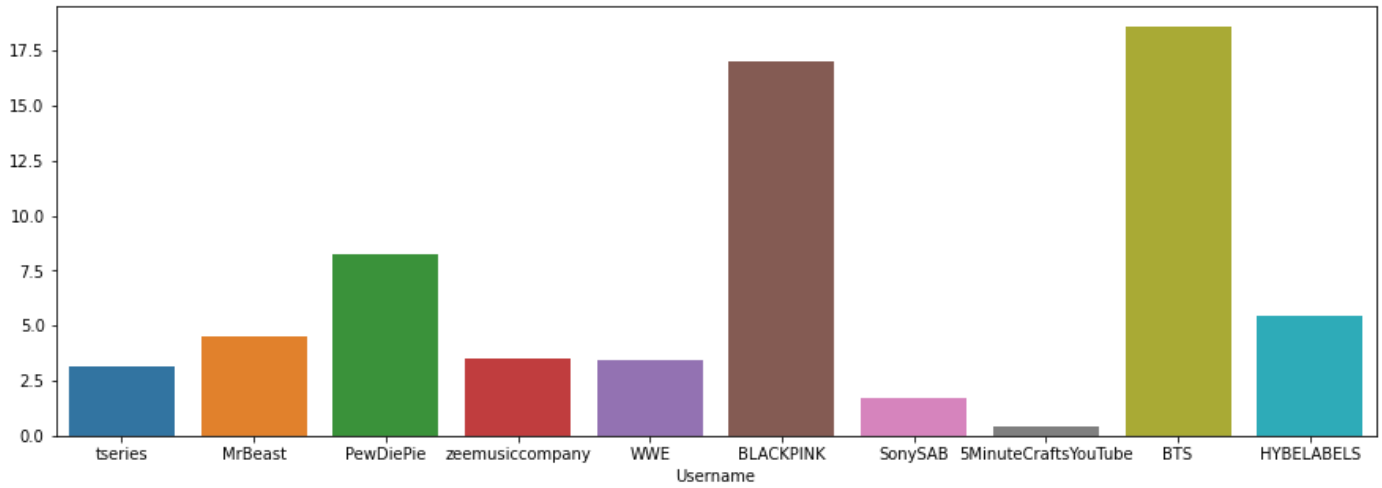


Music and dance is the category with the highest number of streamers

Do certain streamers tend to have more likes relative to their views?

In [24]:
```
top_10_subs=df.sort_values(by='Suscribers',ascending=False).head(10) #top 10 youtubers a
like_view_ratio=(top_10_subs['Likes']/top_10_subs['Visits'])*100     # ratio between num
plt.figure(figsize=(15,5))
sns.barplot(x='Username',y=like_view_ratio,data=top_10_subs)
```

Out[24]:
```
<AxesSubplot:xlabel='Username'>
```

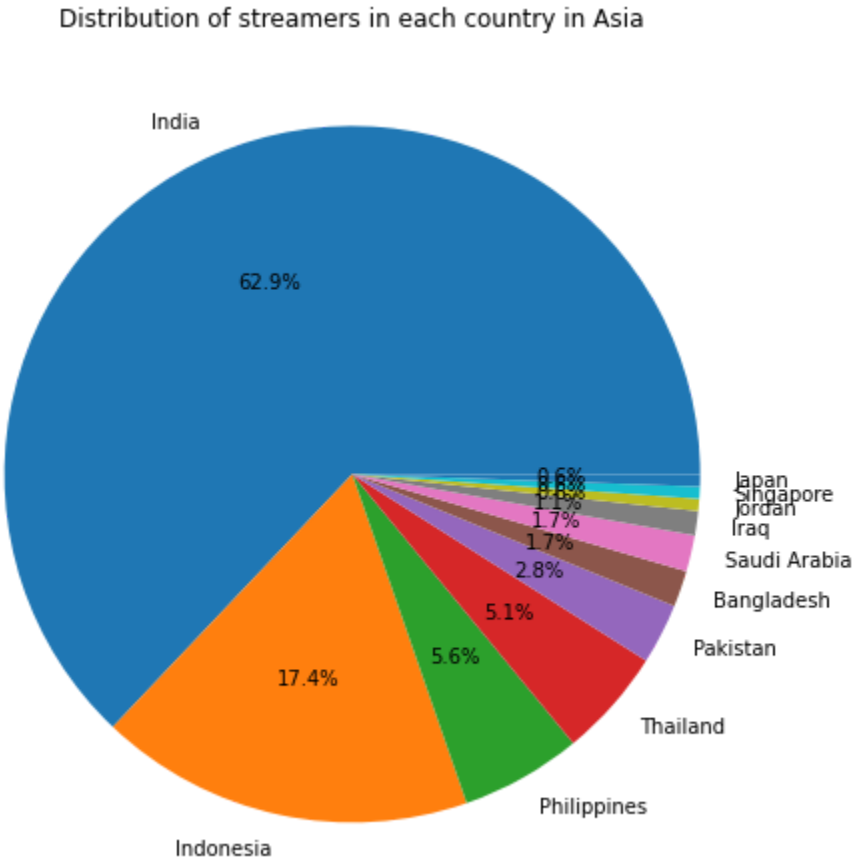


Tseries channel has the highest number of subscribers (as we knew from the graph at the start of our EDA) but it has the smallest like to view ratio among the top 10 channels. This might mean that music video content often tend to generate fewer likes relative to views compared to other

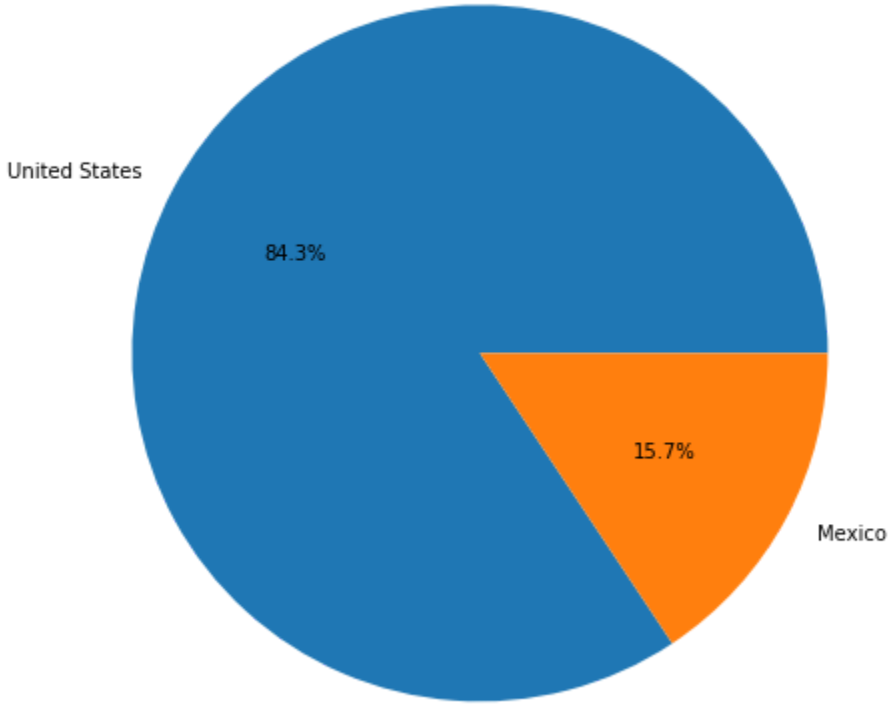
content types like gaming or comedy commentary. People might enjoy listening to the music without necessarily feeling compelled to like this kind of content. On the other hand, BlackPink channel has the smallest number of subscriber but it has the highest like to view ratio. This might mean that BlackPink has a small group of fans relative to other channels but this channel has a very dedicated fan community who actively like and share their videos. This could be due to factors like the group's image, their music style, or the way they interact with fans.

Distribution of streamers across countries within each continent

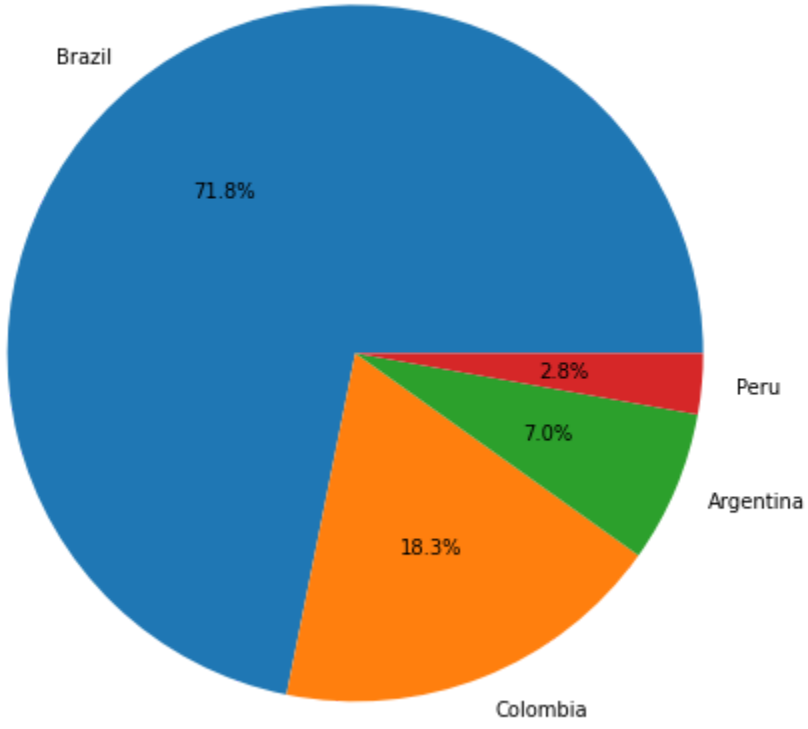
In [25]:
```
def plot_streamer_distribution_per_continent(df):
  unique_continents = df['Continent'].unique()

  # Iterate through unique continents
  for continent in unique_continents:

    country_frequency_per_continent = (df[df['Continent'] == continent]
                                       ['Country'].value_counts().sort_values(ascending=F

    # Create a pie chart for the current continent
    plt.figure(figsize=(8, 8))
    plt.title(f'Distribution of streamers in each country in {continent}')
    plt.pie(country_frequency_per_continent, labels=country_frequency_per_continent.inde


plot_streamer_distribution_per_continent(df)
```



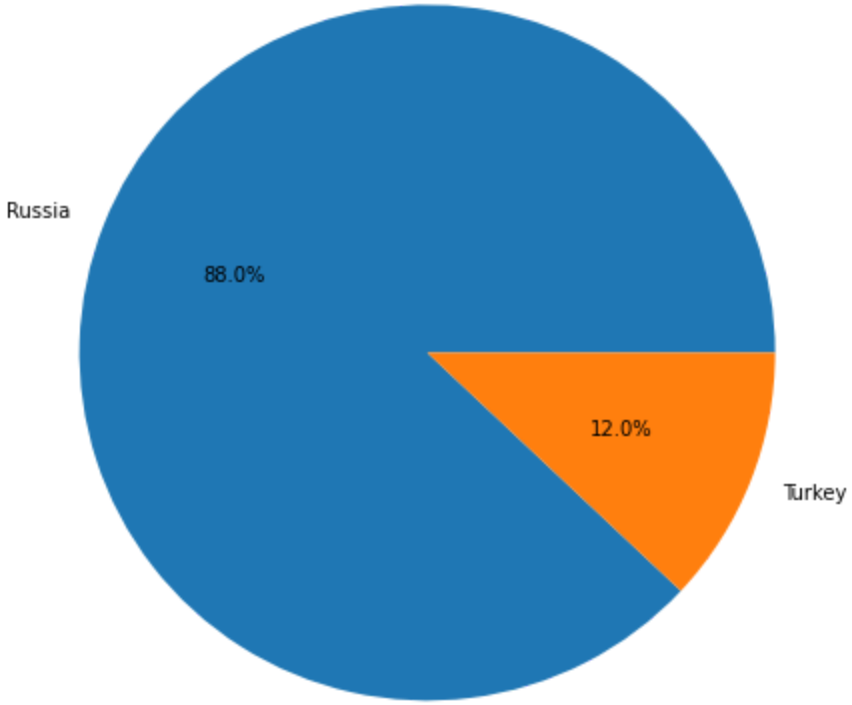
Distribution of streamers in each country in North America



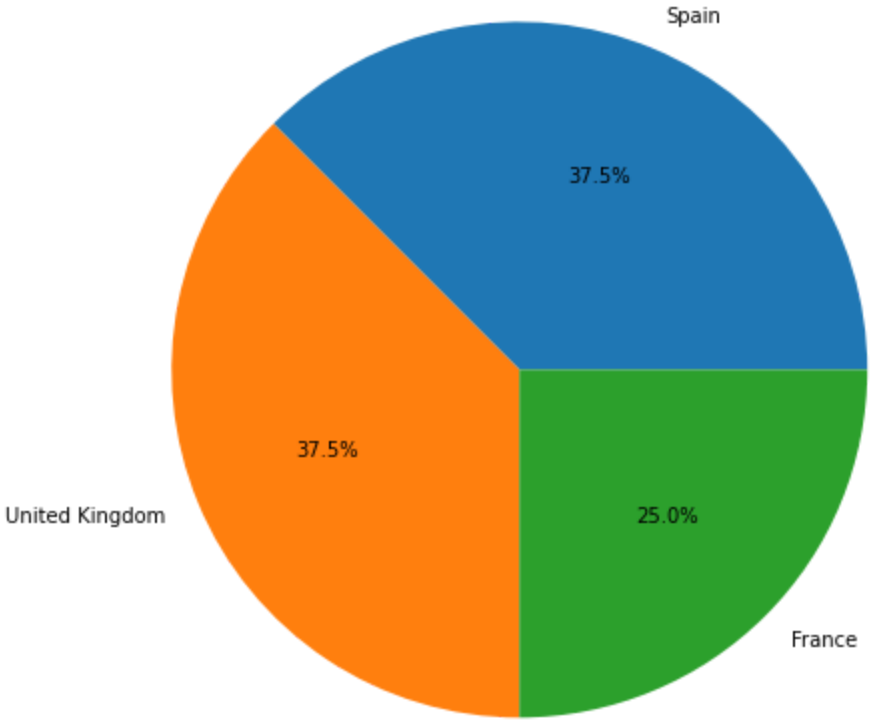
Distribution of streamers in each country in South America

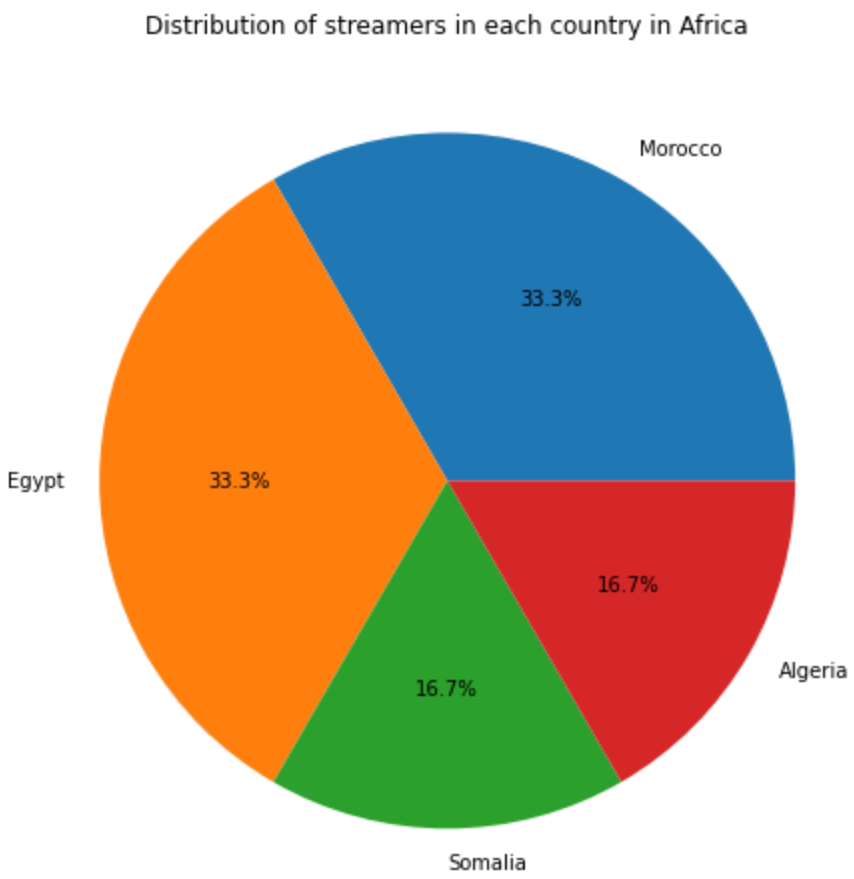


Distribution of streamers in each country in Europe/Asia



Distribution of streamers in each country in Europe

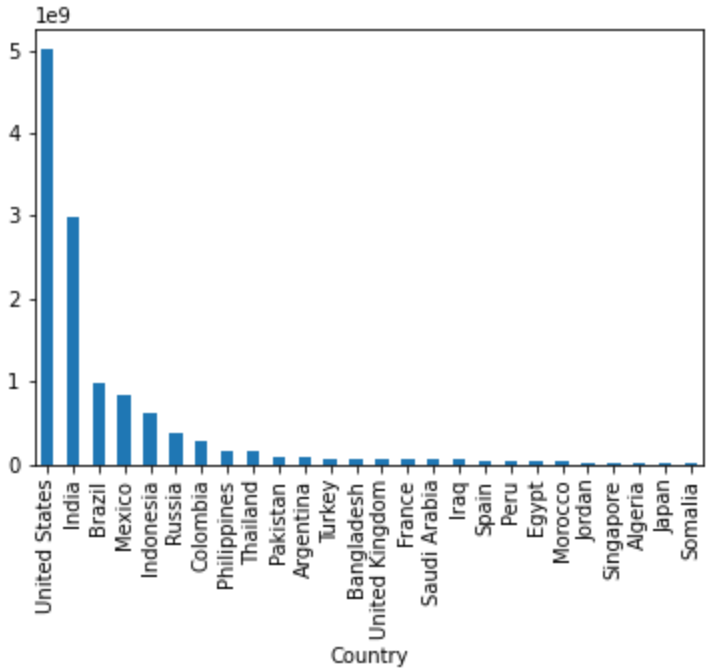




The number of subscribers from each Country

```
In [26]: df.groupby('Country')['Suscribers'].sum().sort_values(ascending=False).plot(kind='bar')
```

```
Out[26]: <AxesSubplot:xlabel='Country'>
```



Content creators from the USA have a massive global audience

Benchmarking

Who are the top performing Streamers?

In [27]:
```
lists_columns=['Suscribers', 'Visits', 'Likes', 'Comments']
average_by_categories = df[lists_columns].mean()

# Filter for streamers above average in ALL metrics
above_average_streamers = df[
    (df['Suscribers']>average_by_categories['Suscribers'])&
    (df['Visits']>average_by_categories['Visits'])&
    (df['Likes']>average_by_categories['Likes'])&
    (df['Comments']>average_by_categories['Comments'])

]

# Select Username, Subscribers, and Visits for top performers
top_performing_creators = above_average_streamers[['Username', 'Suscribers', 'Visits','C

# Sort by Subscribers in descending order (top to bottom)
top_performing_creators = top_performing_creators.sort_values(by='Suscribers', ascending
top_performing_creators
```

Out[27]:

	Username	Suscribers	Visits	Comments
1	MrBeast	183500000.0	117400000.0	18500.0
5	PewDiePie	111500000.0	2400000.0	4900.0
26	dudeperfect	59700000.0	5300000.0	4200.0
34	TaylorSwift	54100000.0	4300000.0	15000.0
39	JuegaGerman	48600000.0	2000000.0	3000.0
43	A4a4a4a4	47300000.0	9700000.0	22000.0
62	KimberlyLoaiza	42100000.0	5300000.0	16000.0
96	TotalGaming093	36300000.0	1500000.0	4900.0
100	markiplier	35500000.0	2100000.0	3800.0
122	AboFlah	32700000.0	3300000.0	11400.0
131	fedevigevani	32000000.0	7700000.0	17000.0
132	dream	31900000.0	3300000.0	19000.0
136	MrBeast2	31300000.0	83100000.0	11600.0
145	jacksepticeye	30400000.0	1600000.0	2300.0
153	DaFuqBoom	29800000.0	52700000.0	82800.0
177	DanTDM	27800000.0	3500000.0	52500.0
179	brentrivera	27600000.0	6400000.0	5000.0
195	nickiminaj	26100000.0	1600000.0	7600.0
207	ZHCYT	25700000.0	2600000.0	2200.0
234	rug	24300000.0	3200000.0	5100.0
238	alanbecker	24300000.0	7600000.0	5900.0
241	juandediospantojaa	24000000.0	3000000.0	3600.0
278	StokesTwins	22700000.0	11700000.0	10000.0
282	souravjoshivlogs7028	22700000.0	5600000.0	8900.0
302	royaltyfam	21900000.0	4700000.0	6600.0