```
#Hi This is going to be my first independant project in my journey of Visualization.
#Let's Start
#Visualization is used to display data into graphs making it easy to understand.
#In this tutorial, we will create data visualizations of popular YouTube channels using Python, Pandas, Plotly Express, and Google Colab.
#We will use a histogram to look at subscriber counts, a pie chart to compare video categories, and a box plot to find patterns in the years
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```
import pandas as pd
import io
import kagglehub
from kagglehub import KaggleDatasetAdapter
```

```
#We are going to import our data into our notebook.
#After downloading your dataset, you should return to your handy dandy Google Colab notebook.
#Download Link - https://www.kaggle.com/datasets/surajjha101/top-youtube-channels-data
from google.colab import files
uploaded = files.upload()
```

Choose Files most_subs…channels.csv

- **most_subscribed_youtube_channels.csv**(text/csv) - 70911 bytes, last modified: 3/20/2025 - 100% done

```
#df variable saves dataframe returned from read_csv
#uploaded is a dictionary with file names
df = pd.read_csv(io.BytesIO(uploaded['most_subscribed_youtube_channels.csv']))
display(df)
```

	rank	Youtuber	subscribers	video views	video count	category	started
0	1	T-Series	222,000,000	198,459,090,822	17,317	Music	2006
1	2	YouTube Movies	154,000,000	0	0	Film & Animation	2015
2	3	Cocomelon - Nursery Rhymes	140,000,000	135,481,339,848	786	Education	2006
3	4	SET India	139,000,000	125,764,252,686	91,271	Shows	2006
4	5	Music	116,000,000	0	0	NaN	2013
...	...	...	...	...	...	...	...
995	996	JP Plays	10,900,000	4,609,300,218	3,528	Gaming	2014
996	997	TrapMusicHDTV	10,900,000	4,070,521,973	690	Music	2013
997	998	Games EduUu	10,900,000	3,093,784,767	1,006	Gaming	2011
998	999	Hueva	10,900,000	3,040,301,750	831	Gaming	2012
999	1000	Dobre Brothers	10,900,000	2,808,411,693	590	People & Blogs	2017

1000 rows × 7 columns

Next steps: Generate code with df View recommended plots New interactive sheet

```
# Data Shape
print("Data Shape:", df.shape)

# Descriptive Statistics
print("\nDescriptive Statistics:")
numerical_cols = ['subscribers', 'video views', 'video count']
display(df[numerical_cols].describe())

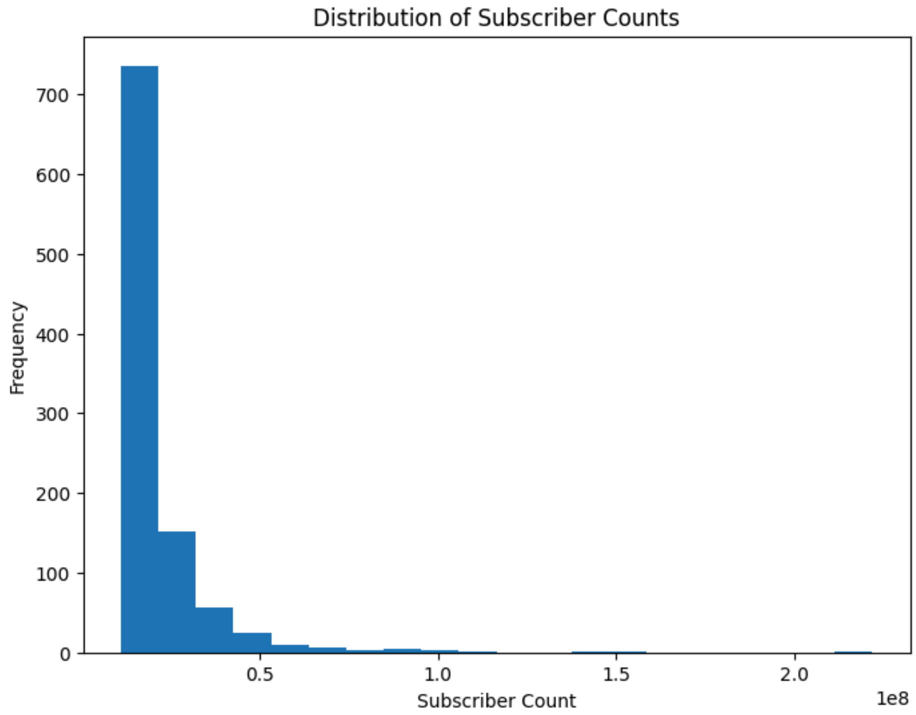
# Data Distribution (Subscriber Count)
import matplotlib.pyplot as plt
plt.figure(figsize=(8, 6))
plt.hist(df['subscribers'].str.replace(',', '').astype(int), bins=20)
plt.xlabel("Subscriber Count")
plt.ylabel("Frequency")
plt.title("Distribution of Subscriber Counts")
plt.show()

# Correlation Analysis
print("\nCorrelation Matrix:")
correlation_matrix = df[['subscribers', 'video views' , 'video count']].apply(lambda x: x.str.replace(',', '').astype(int)).corr()
display(correlation_matrix)
```

```
# Unique Values (Category)
print("\nUnique Categories:")
print(df['category'].unique())
```

```
Descriptive Statistics:
```

	subscribers	video views	video count
count	1000	1000	1000
unique	286	991	856
top	11,100,000	0	0
freq	21	10	10



```
Correlation Matrix:
```

	subscribers	video views	video count
subscribers	1.000000	0.746863	0.061532
video views	0.746863	1.000000	0.148523
video count	0.061532	0.148523	1.000000

```
Unique Categories:
['Music' 'Film & Animation' 'Education' 'Shows' nan 'Gaming'
 'Entertainment' 'People & Blogs' 'Sports' 'Howto & Style'
 'News & Politics' 'Comedy' 'Trailers' 'Nonprofits & Activism'
 'Science & Technology' 'Movies' 'Pets & Animals' 'Autos & Vehicles'
 'Travel & Events']
```

Next steps: Generate code with correlation_matrix | View recommended plots | New interactive sheet

```
# 1. Handle Missing Values
df.dropna(inplace=True)  # Remove rows with missing values

# 2. Convert Data Types
df['subscribers'] = df['subscribers'].str.replace(',', '').astype(int)
df['video views'] = df['video views'].str.replace(',', '').astype(int)
df['video count'] = df['video count'].str.replace(',', '').astype(int)

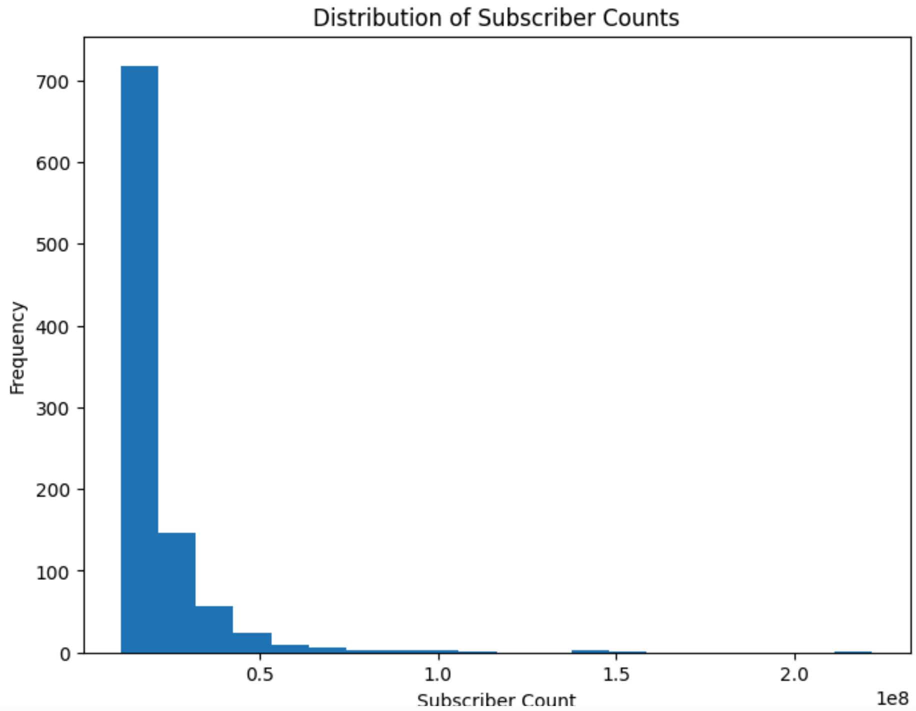
# 3. Select Relevant Columns
relevant_columns = ['rank', 'Youtuber', 'subscribers', 'video views', 'video count', 'category']
df_visualization = df[relevant_columns]

display(df_visualization.head())
```

	rank	Youtuber	subscribers	video views	video count	category
0	1	T-Series	222000000	198459090822	17317	Music
1	2	YouTube Movies	154000000	0	0	Film & Animation
2	3	Cocomelon - Nursery Rhymes	140000000	135481339848	786	Education
3	4	SET India	139000000	125764252686	91271	Shows
5	6	PewDiePie	111000000	28469458228	4497	Gaming

```
import matplotlib.pyplot as plt

# 1. Histogram of Subscriber Counts
plt.figure(figsize=(8, 6))
plt.hist(df_visualization['subscribers'], bins=20)
plt.xlabel("Subscriber Count")
plt.ylabel("Frequency")
plt.title("Distribution of Subscriber Counts")
plt.show()
```

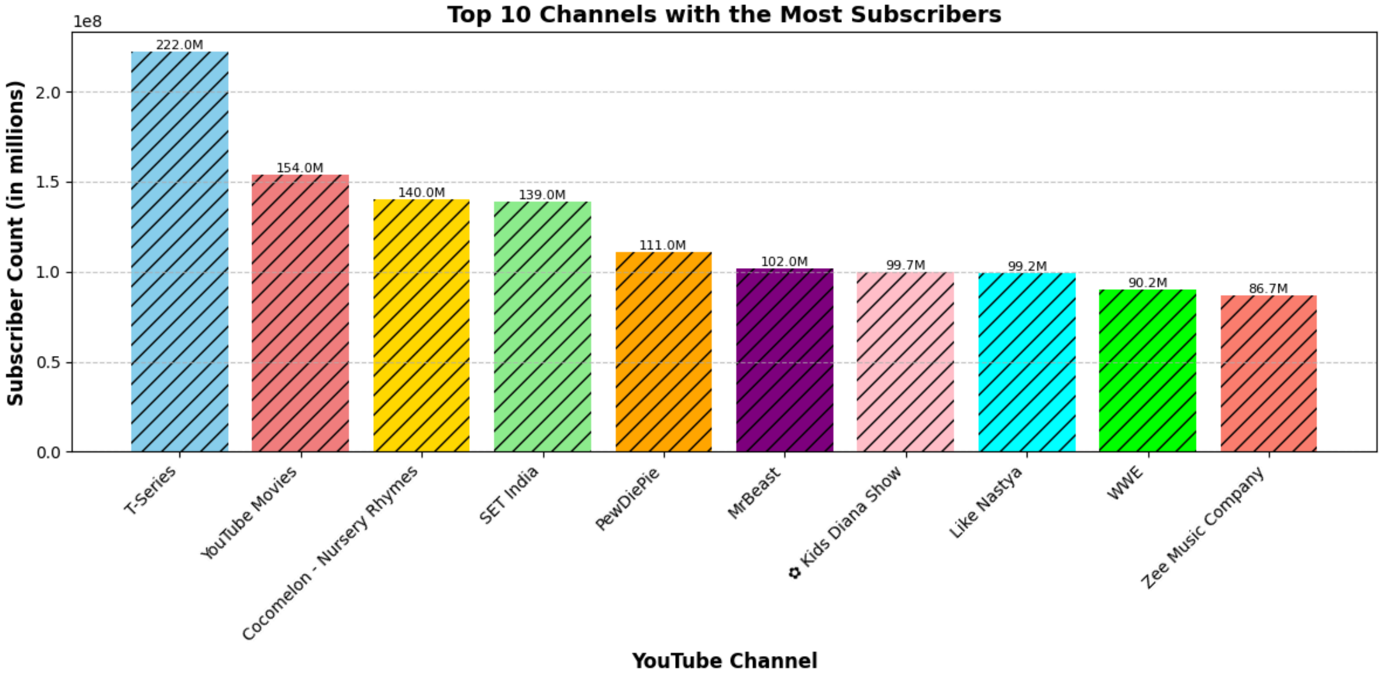


```
## 2. Bar Chart of Top 10 Channels
top_10_channels = df_visualization.sort_values('subscribers', ascending=False).head(10)
plt.figure(figsize=(12, 6))
bars = plt.bar(top_10_channels['Youtuber'], top_10_channels['subscribers'], color=['skyblue', 'lightcoral', 'gold', 'lightgreen', 'orange', '

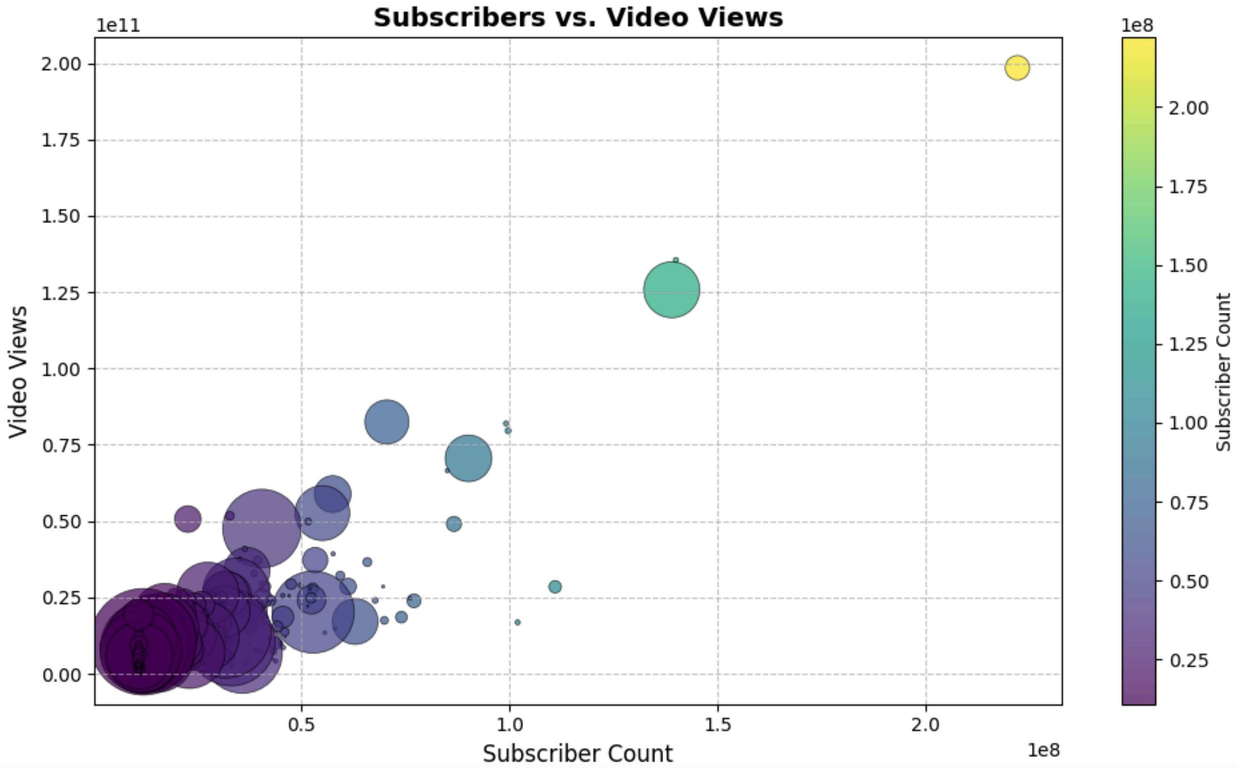

plt.xlabel("YouTube Channel", fontsize=12, fontweight='bold')
plt.ylabel("Subscriber Count (in millions)", fontsize=12, fontweight='bold')
plt.title("Top 10 Channels with the Most Subscribers", fontsize=14, fontweight='bold')
plt.xticks(rotation=45, ha='right', fontsize=10)

# Add data labels to the bars
for bar in bars:
    height = bar.get_height()
    plt.text(bar.get_x() + bar.get_width() / 2, height, f'{height/1000000:.1f}M', ha='center', va='bottom', fontsize=8)

plt.tight_layout()
plt.grid(axis='y', linestyle='--', alpha=0.7)
plt.show()
```



```
# 3. Scatter Plot of Subscribers vs. Video Views
plt.figure(figsize=(10, 6))
plt.scatter(df_visualization['subscribers'], df_visualization['video views'],
            s=df_visualization['video count'] / 100,
            alpha=0.7,
            c=df_visualization['subscribers'],
            cmap='viridis',
            edgecolors='black',
            linewidths=0.5)
plt.xlabel("Subscriber Count", fontsize=12)
plt.ylabel("Video Views", fontsize=12)
plt.title("Subscribers vs. Video Views", fontsize=14, fontweight='bold')
plt.grid(True, linestyle='--', alpha=0.7)
plt.colorbar(label='Subscriber Count')
plt.tight_layout()
plt.show()
```



```
# 4. Box Plot of Subscribers by Category
plt.figure(figsize=(12, 6))

plt.boxplot([df_visualization[df_visualization['category'] == category]['subscribers'] for category in df_visualization['category'].unique()
            labels=df_visualization['category'].unique(), patch_artist=True,
            boxprops=boxprops, medianprops=medianprops, flierprops=flierprops, whiskerprops=whiskerprops, capprops=capprops)

# Add colors to the boxes - Modified to ensure enough colors and artists
plt.xticks(rotation=45, ha='right', fontsize=10)  # Rotate labels by 45 degrees

plt.tight_layout()  # Adjust layout to prevent labels from being cut off
plt.show()
```

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<ipython-input-20-1c53874f970e>:7: MatplotlibDeprecationWarning: The 'labels' parameter of boxplot() has been renamed 'tick_labels' sinc
  plt.boxplot([df_visualization[df_visualization['category'] == category]['subscribers'] for category in df_visualization['category'].un
```

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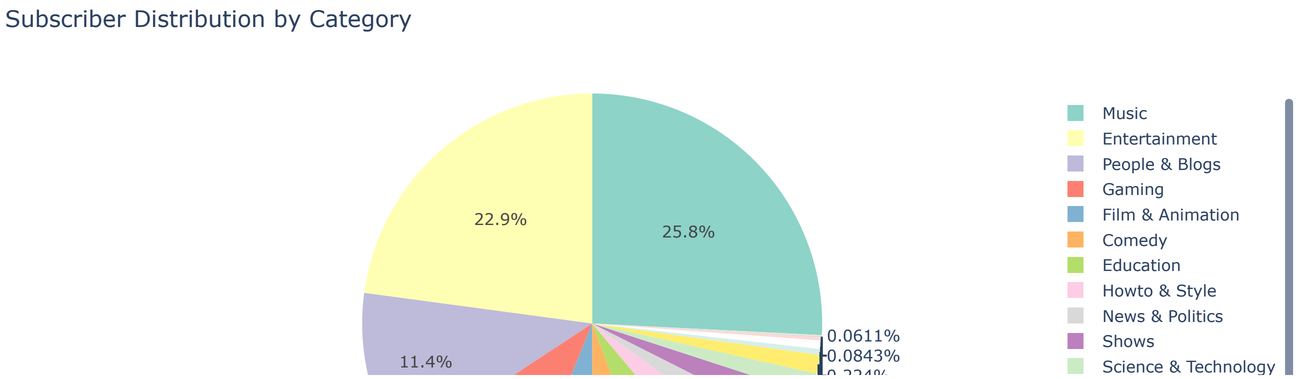
plt.figure(figsize=(10, 5))
i
import plotly.express as px
fig = px.pie(df, values='subscribers', names='category', title='Subscriber Distribution by Category',
             color_discrete_sequence=px.colors.qualitative.Set3)  # Use a color palette for unique colors
fig.show()
```


Subscriber Distribution by Category
Music
Entertainment
People & Blogs
Gaming
Film & Animation
Comedy
Education
Howto & Style
News & Politics
Shows
Science & Technology