```
from google.colab import files
uploaded = files.upload()
```

Choose files 2 files

- **apps.csv**(text/csv) - 1213225 bytes, last modified: 08/07/2025 - 100% done
- **user_reviews.csv**(text/csv) - 7669276 bytes, last modified: 08/07/2025 - 100% done

```
Saving apps.csv to apps.csv
Saving user_reviews.csv to user_reviews.csv
```

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
# Load app-level data
apps_df = pd.read_csv('apps.csv')
print("Apps Data:", apps_df.shape)
apps_df.head()

# Load user reviews
reviews_df = pd.read_csv('user_reviews.csv')
print("User Reviews:", reviews_df.shape)
reviews_df.head()
```

```
Apps Data: (9659, 14)
User Reviews: (64295, 5)
```

	App	Translated_Review	Sentiment	Sentiment_Polarity	Sentiment_Subjectivity
0	10 Best Foods for You	I like eat delicious food. That's I'm cooking ...	Positive	1.00	0.533333
1	10 Best Foods for You	This help eating healthy exercise regular basis	Positive	0.25	0.288462
2	10 Best Foods for You	NaN	NaN	NaN	NaN
	10				

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

```
# Merge datasets on 'App' column
merged_df = pd.merge(apps_df, reviews_df, on='App', how='inner')
print("Merged Data:", merged_df.shape)
merged_df.head()
```

```
Merged Data: (61556, 18)
```

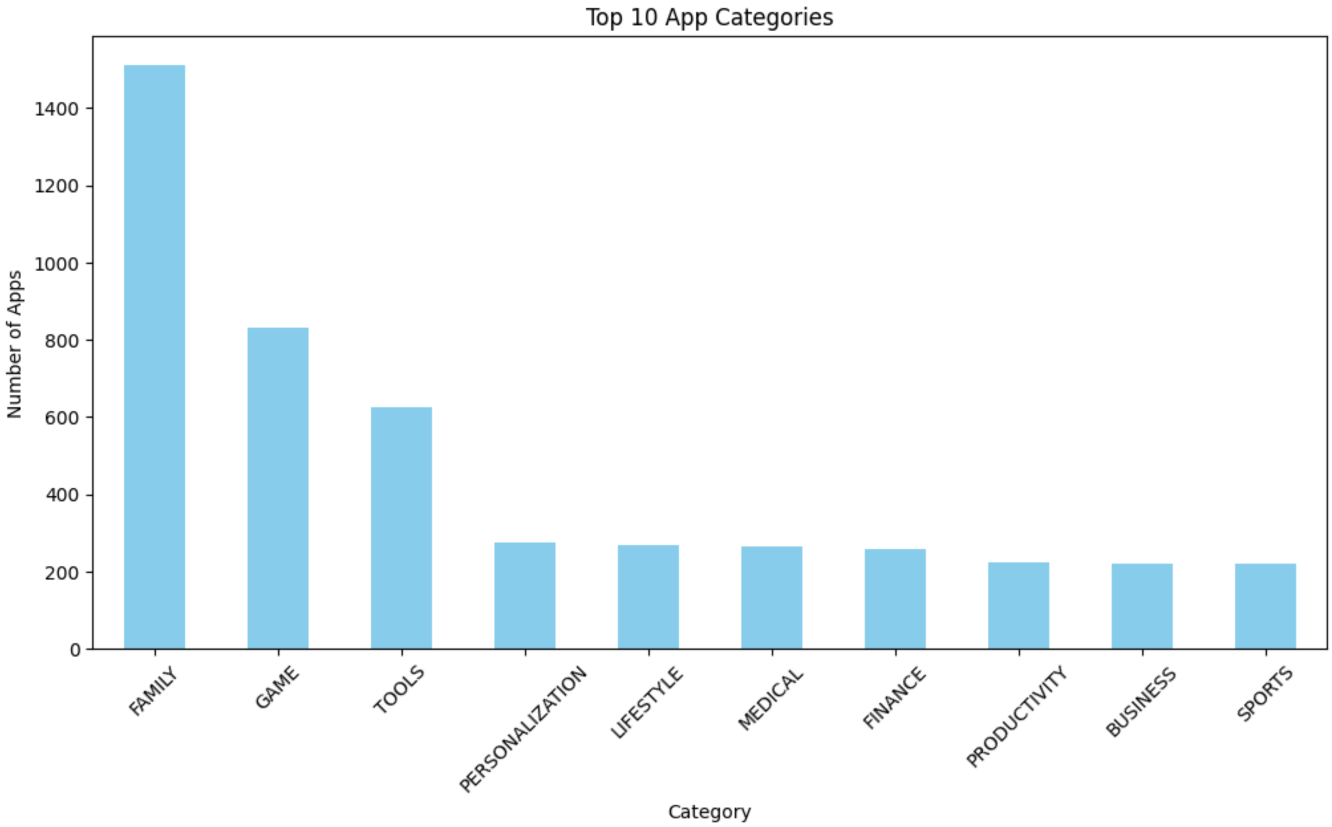
	Unnamed: 0	App	Category	Rating	Reviews	Size	Installs	Type	Price	Co R
0	1	Coloring book moana	ART_AND_DESIGN	3.9	967	14.0	500,000+	Free	0	Ev
1	1	Coloring book moana	ART_AND_DESIGN	3.9	967	14.0	500,000+	Free	0	Ev
2	1	Coloring book moana	ART_AND_DESIGN	3.9	967	14.0	500,000+	Free	0	Ev
3	1	Coloring book moana	ART_AND_DESIGN	3.9	967	14.0	500,000+	Free	0	Ev
4	1	Coloring book moana	ART_AND_DESIGN	3.9	967	14.0	500,000+	Free	0	Ev

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

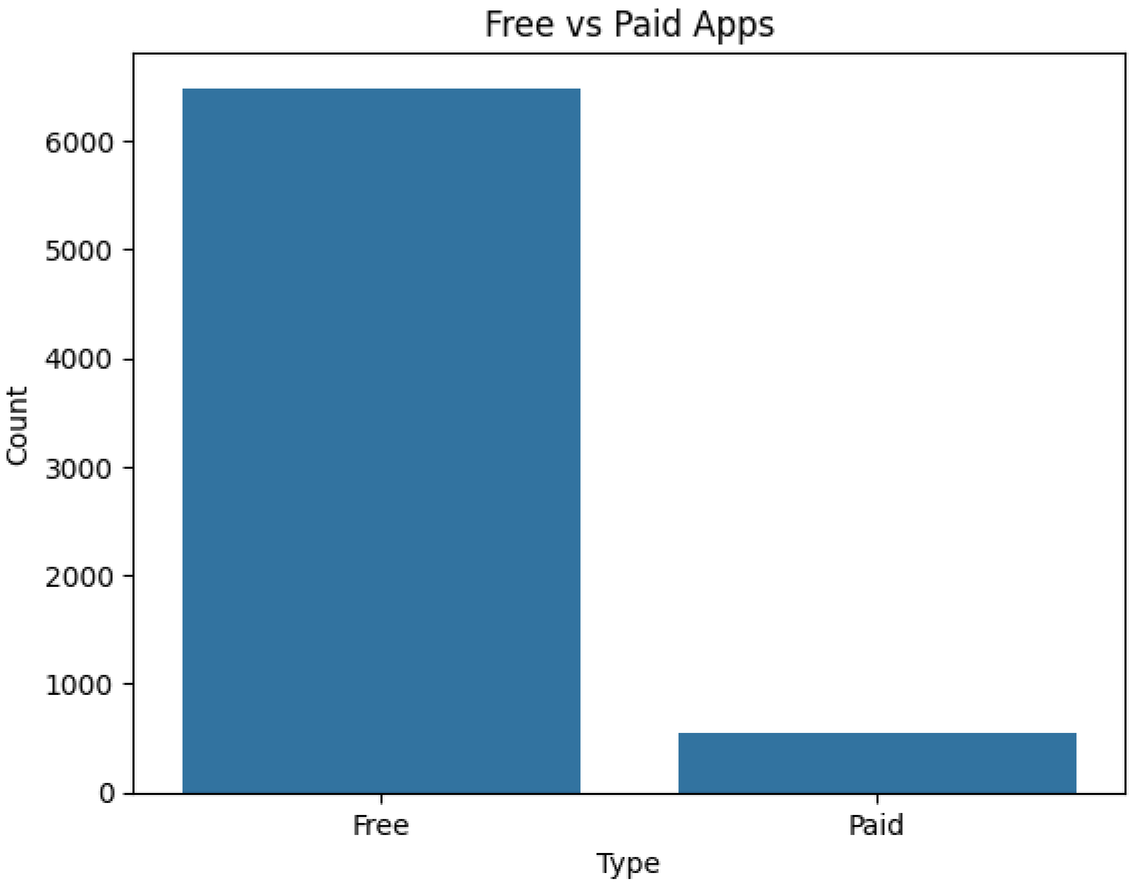
```
# --- INSTALLED APP CLEANING ---
apps_df = apps_df[apps_df['Installs'].notnull()]
apps_df['Installs'] = apps_df['Installs'].astype(str)
apps_df['Installs'] = apps_df['Installs'].str.replace(',', '', regex=False)
apps_df['Installs'] = apps_df['Installs'].str.replace('+', '', regex=False)
apps_df['Installs'] = apps_df['Installs'].astype(int)

# --- PRICE CLEANING ---
apps_df = apps_df[apps_df['Price'].notnull()]
apps_df['Price'] = apps_df['Price'].astype(str)
apps_df = apps_df[apps_df['Price'].str.startswith('$') | apps_df['Price'].str.match(r'^\d+(\
apps_df['Price'] = apps_df['Price'].str.replace('$', '', regex=False)
apps_df['Price'] = apps_df['Price'].astype(float)

# --- SIZE CLEANING ---
apps_df = apps_df[apps_df['Size'].notnull()]
apps_df = apps_df[apps_df['Size'] != 'Varies with device']
apps_df['Size'] = apps_df['Size'].astype(str)
apps_df['Size'] = apps_df['Size'].str.replace('M', '').str.replace('k', '')
apps_df['Size'] = pd.to_numeric(apps_df['Size'], errors='coerce')
apps_df = apps_df.dropna(subset=['Size'])

# --- RATING CLEANING ---
apps_df = apps_df[apps_df['Rating'].notnull()]
apps_df['Rating'] = pd.to_numeric(apps_df['Rating'], errors='coerce')
apps_df = apps_df.dropna(subset=['Rating'])



print("Shape after cleaning:", apps_df.shape)
print(apps_df.dtypes)
```

```
Shape after cleaning: (7021, 14)
Unnamed: 0          int64
App                object
Category           object
Rating            float64
Reviews             int64
Size              float64
Installs            int64
Type               object
Price             float64
Content Rating     object
Genres             object
Last Updated       object
Current Ver        object
Android Ver        object
dtype: object
```

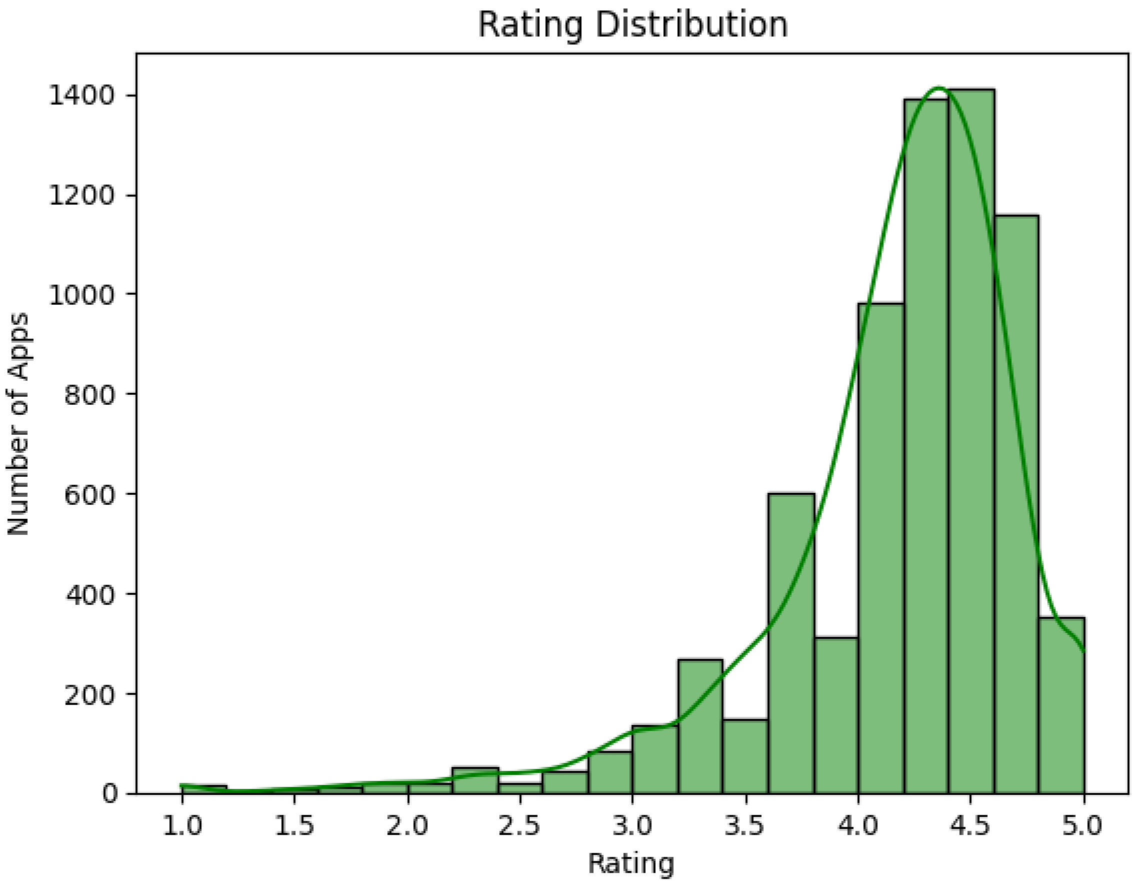
```
plt.figure(figsize=(12,6))
apps_df['Category'].value_counts().head(10).plot(kind='bar', color='skyblue')
plt.title("Top 10 App Categories")
plt.ylabel("Number of Apps")
plt.xlabel("Category")
plt.xticks(rotation=45)
plt.show()
```



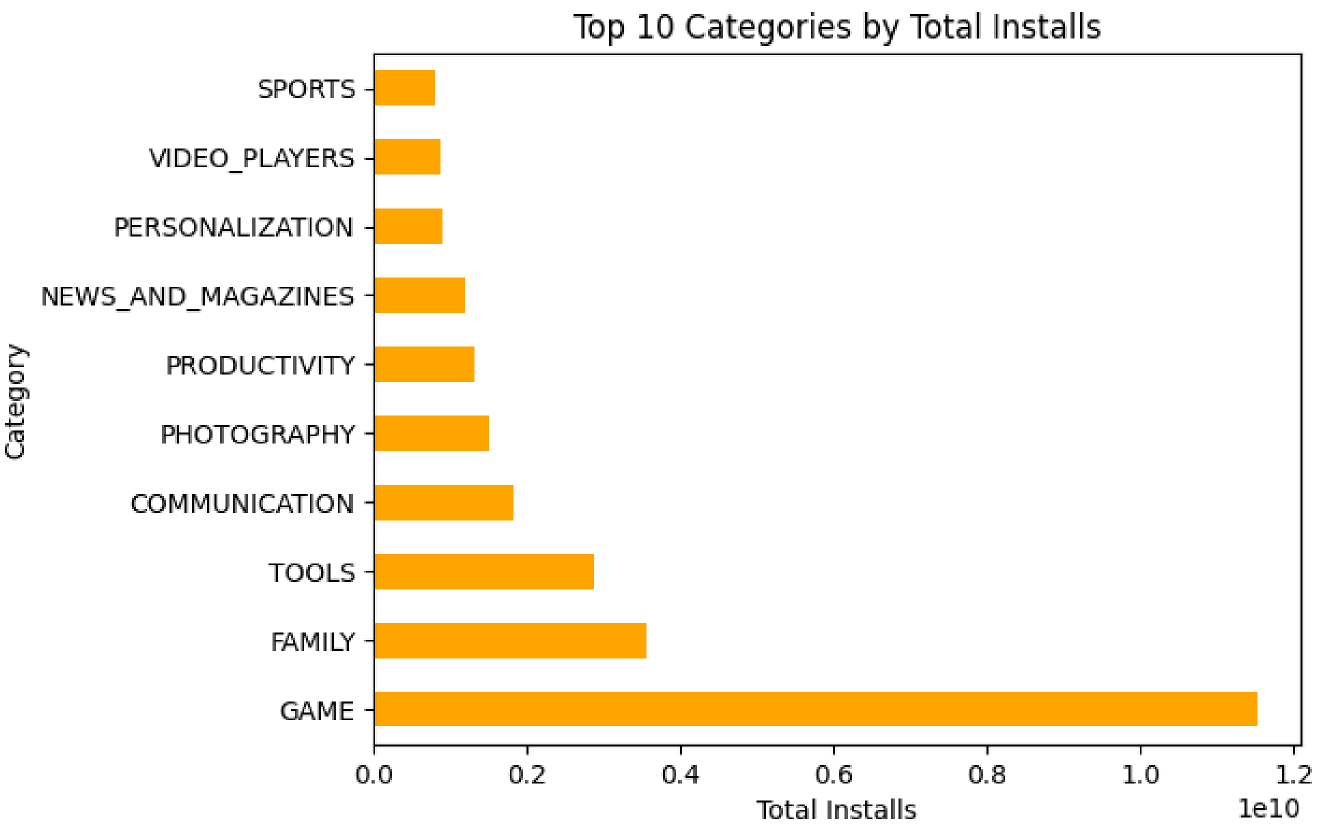
```
sns.countplot(x='Type', data=apps_df)
plt.title("Free vs Paid Apps")
plt.xlabel("Type")
plt.ylabel("Count")
plt.show()
```



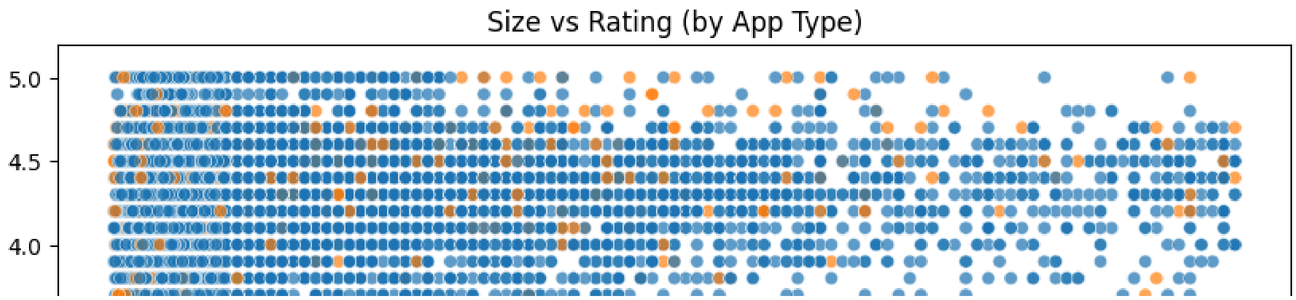
```
sns.histplot(apps_df['Rating'], bins=20, kde=True, color='green')
plt.title("Rating Distribution")
plt.xlabel("Rating")
plt.ylabel("Number of Apps")
plt.show()
```



```
top_installs = apps_df.groupby('Category')['Installs'].sum().sort_values(ascending=False).he
top_installs.plot(kind='barh', color='orange')
plt.title("Top 10 Categories by Total Installs")
plt.xlabel("Total Installs")
plt.ylabel("Category")
plt.show()
```



```
plt.figure(figsize=(10,6))
sns.scatterplot(x='Size', y='Rating', hue='Type', data=apps_df, alpha=0.7)
plt.title("Size vs Rating (by App Type)")
plt.xlabel("Size (MB)")
plt.ylabel("Rating")
plt.show()
```



```
reviews_df = pd.read_csv('user_reviews.csv')
reviews_df.dropna(subset=['Sentiment'], inplace=True)
reviews_df.drop_duplicates(inplace=True)
```