steamAnalysis

July 12, 2023

1 STEAM DATA ANALYSIS

[83]:
```
import numpy as np
import pandas as pd
import sqlite3
import matplotlib.pyplot as plt
import seaborn as sns
import datetime
```

1.1 Connect to Database and pull data into the dataframe

[84]:
```
conn = sqlite3.connect("SteamDB.sqlite")
cur = conn.cursor()
```

[85]:
```
sqlQuery = """SELECT name, popularTags, price, features, lanInterface,␣
 ↪LanAudio, lanSubtitle, lanAllSupported, genre, developer, publisher,␣
 ↪releaseDate, minSysReq, recSysReq, reviewTotal, reviewPositive,␣
 ↪reviewNegative, reviewPercentage
from GameDetails
JOIN Games ON GameDetails.gameId=Games.id
order by GameDetails.gameId"""
```

[86]:
```
df = pd.read_sql_query(sqlQuery, conn, index_col="name",␣
 ↪parse_dates="releaseDate")
conn.close()
```

1.2 Data Summary

[87]:
```
df.head()
```

[87]:
```
popularTags  \
name
Counter-Strike: Global Offensive
FPS,Shooter,Multiplayer,Competitive,Action,Tea…
ELDEN RING                          Souls-like,Dark Fantasy,RPG,Open
World,Difficu…
```

```
Red Dead Redemption 2             Open World,Story
Rich,Western,Adventure,Action…
Forza Horizon 5                   Racing,Open
World,Driving,Multiplayer,Automobi…
Rust                              Survival,Crafting,Multiplayer,Open World,Open
…

                                       price  \
name
Counter-Strike: Global Offensive    274,95 TL
ELDEN RING                          699,00 TL
Red Dead Redemption 2             1.150,00 TL
Forza Horizon 5                     599,00 TL
Rust                                308,00 TL

features  \
name
Counter-Strike: Global Offensive  Steam Achievements,Full controller
support,Ste…
ELDEN RING                        Single-player,Online PvP,Online Co-op,Steam
Ac…
Red Dead Redemption 2             Single-player,Online PvP,Online Co-op,Steam
Ac…
Forza Horizon 5                   Single-player,Online PvP,Online Co-op,Cross-
Pl…
Rust                              MMO,Online PvP,Online Co-op,Cross-Platform
Mul…

lanInterface  \
name
Counter-Strike: Global Offensive
English,Czech,Danish,Dutch,Finnish,French,Germ…
ELDEN RING                        English,French,Italian,German,Spanish -
Spain,…
Red Dead Redemption 2             English,French,Italian,German,Spanish -
Spain,…
Forza Horizon 5                   English,French,Italian,German,Spanish -
Spain,…
Rust                              English,French,Italian,German,Spanish -
Spain,…

LanAudio  \
name
Counter-Strike: Global Offensive
English
ELDEN RING
English
```

```
Red Dead Redemption 2
English
Forza Horizon 5                  English,French,German,Portuguese -
Brazil,Span…
Rust                             English,French,Italian,German,Spanish -
Spain,…

lanSubtitle  \
name
Counter-Strike: Global Offensive
ELDEN RING                       English,French,Italian,German,Spanish -
Spain,…
Red Dead Redemption 2            English,French,Italian,German,Spanish -
Spain,…
Forza Horizon 5                  English,Italian,Spanish -
Spain,Czech,Hungaria…
Rust                             English,French,Italian,German,Spanish -
Spain,…

                                 lanAllSupported  \
name
Counter-Strike: Global Offensive              28
ELDEN RING                                    14
Red Dead Redemption 2                         13
Forza Horizon 5                               16
Rust                                          25

genre  \
name
Counter-Strike: Global Offensive                                Action,Free to
Play
ELDEN RING
Action,RPG
Red Dead Redemption 2
Action,Adventure
Forza Horizon 5
Action,Adventure,Racing,Simulation,Sports
Rust                             Action,Adventure,Indie,Massively
Multiplayer,RPG

                                                        developer  \
name
Counter-Strike: Global Offensive  Valve,Hidden Path Entertainment
ELDEN RING                                    FromSoftware Inc.
Red Dead Redemption 2                            Rockstar Games
Forza Horizon 5                                 Playground Games
Rust                                           Facepunch Studios
```

```
                                                                publisher
\
name
Counter-Strike: Global Offensive                                        Valve
ELDEN RING                        FromSoftware Inc.,Bandai Namco Entertainment
Red Dead Redemption 2                                          Rockstar Games
Forza Horizon 5                                              Xbox Game Studios
Rust                                                         Facepunch Studios

                                releaseDate  \
name
Counter-Strike: Global Offensive  2012-08-21
ELDEN RING                        2022-02-24
Red Dead Redemption 2             2019-12-05
Forza Horizon 5                   2021-11-08
Rust                              2018-02-08

minSysReq  \
name
Counter-Strike: Global Offensive
ELDEN RING                        Requires a 64-bit processor and operating
syst…
Red Dead Redemption 2             Requires a 64-bit processor and operating
syst…
Forza Horizon 5                   Requires a 64-bit processor and operating
syst…
Rust                              Requires a 64-bit processor and operating
syst…

recSysReq  \
name
Counter-Strike: Global Offensive
ELDEN RING                        Requires a 64-bit processor and operating
syst…
Red Dead Redemption 2             Requires a 64-bit processor and operating
syst…
Forza Horizon 5                   Requires a 64-bit processor and operating
syst…
Rust                              Requires a 64-bit processor and operating
syst…

                                reviewTotal  reviewPositive  reviewNegative  \
name
Counter-Strike: Global Offensive      7327687         6502966          824721
ELDEN RING                             683586          628828           54758
Red Dead Redemption 2                  420421          379969           40452
```

```
Forza Horizon 5                          124996          110002           14994
Rust                                     938300          816121          122179
```

```
                                  reviewPercentage
name
Counter-Strike: Global Offensive                88
ELDEN RING                                      91
Red Dead Redemption 2                           90
Forza Horizon 5                                 88
Rust                                            86
```

1.3 Log Count

[88]:
```
df.shape
```

[88]:
```
(26457, 17)
```

[89]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 26457 entries, Counter-Strike: Global Offensive to DEKONSTRUKT
Data columns (total 17 columns):
 #   Column            Non-Null Count  Dtype
---  ------            --------------  -----
 0   popularTags       26457 non-null  object
 1   price             26435 non-null  object
 2   features          26457 non-null  object
 3   lanInterface      26457 non-null  object
 4   LanAudio          26457 non-null  object
 5   lanSubtitle       26457 non-null  object
 6   lanAllSupported   26457 non-null  int64
 7   genre             26457 non-null  object
 8   developer         26457 non-null  object
 9   publisher         26457 non-null  object
 10  releaseDate       26428 non-null  datetime64[ns]
 11  minSysReq         26457 non-null  object
 12  recSysReq         26457 non-null  object
 13  reviewTotal       26457 non-null  int64
 14  reviewPositive    26457 non-null  int64
 15  reviewNegative    26457 non-null  int64
 16  reviewPercentage  26457 non-null  int64
dtypes: datetime64[ns](1), int64(5), object(11)
memory usage: 3.6+ MB
```

[90]:
```
df.isnull().values.any()
```

[90]:
```
True
```

[91]:
```
df.isnull().sum()
```

[91]:
```
popularTags          0
price               22
features             0
lanInterface         0
LanAudio             0
lanSubtitle          0
lanAllSupported      0
genre                0
developer            0
publisher            0
releaseDate         29
minSysReq            0
recSysReq            0
reviewTotal          0
reviewPositive       0
reviewNegative       0
reviewPercentage     0
dtype: int64
```

1.4 Data Cleaning

[92]:
```
df.dropna(subset=["price","releaseDate"], inplace=True)
#df = df[df["reviewTotal"] > 100]
df.isnull().values.any()
```

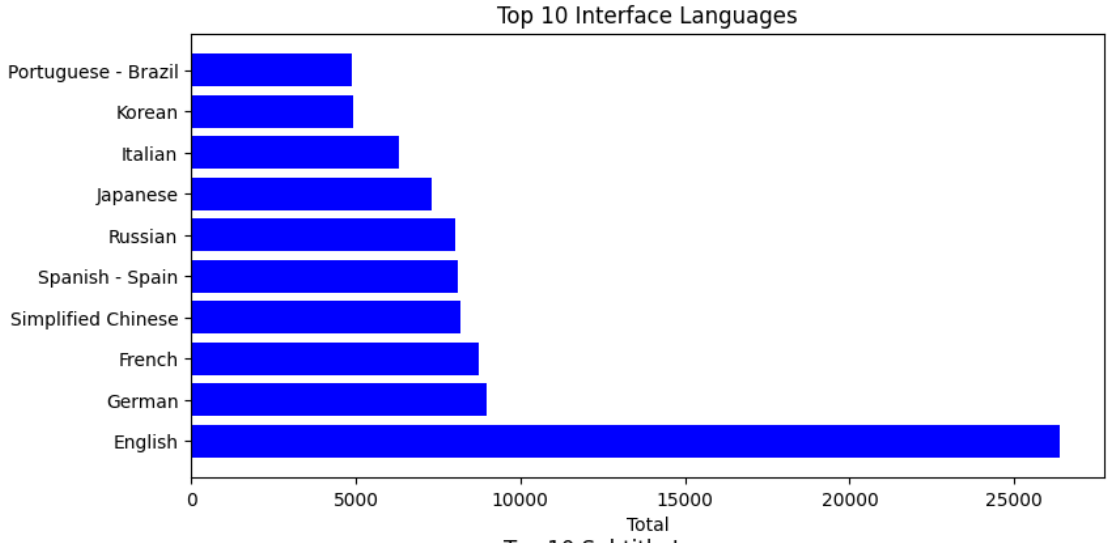
[92]:
```
False
```

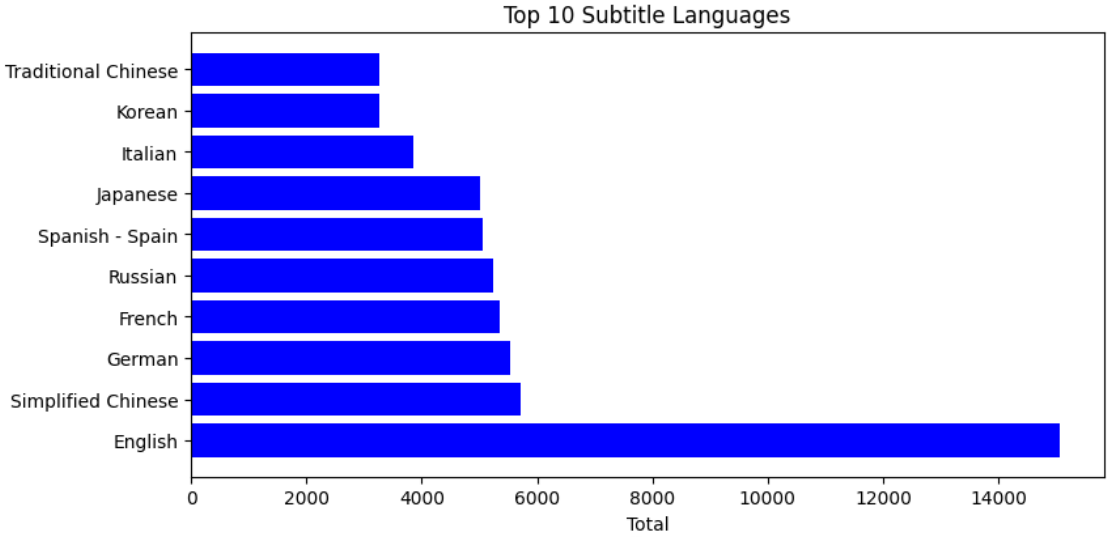
1.5 Analysis of Language support

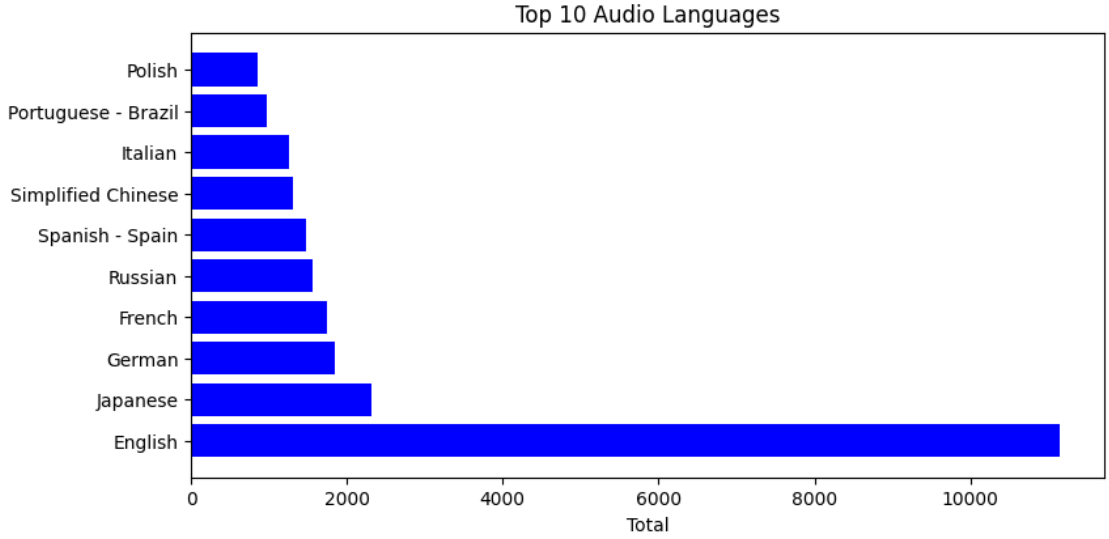
1.5.1 Most Popular Languages

[130]:
```
def lanSep(column):
    lanArr = []
    def adFe(x):
        for i in x:
            lanArr.append(i)

    dfLan = df[column].str.split(",")
    dfLan.apply(adFe)

    dfLan = pd.DataFrame(data=pd.Series(lanArr), columns=[column])
    dfLan = dfLan[dfLan[column] != ""]
    dfLan.reset_index(drop=True, inplace=True)
    return dfLan[column].value_counts().head(10)
```

```
dfInter = lanSep("lanInterface")
dfSub = lanSep("lanSubtitle")
dfAud = lanSep("LanAudio")

fig, axes = plt.subplots(nrows = 3, ncols = 1, figsize=(9, 15))

axes[0].barh(dfInter.index, dfInter.values, color='Blue')
axes[0].set_xlabel("Total")
axes[0].set_title("Top 10 Interface Languages")

axes[1].barh(dfSub.index, dfSub.values, color='Blue')
axes[1].set_xlabel("Total")
axes[1].set_title("Top 10 Subtitle Languages")

axes[2].barh(dfAud.index, dfAud.values, color='Blue')
axes[2].set_xlabel("Total")
axes[2].set_title("Top 10 Audio Languages")

plt.show()
```

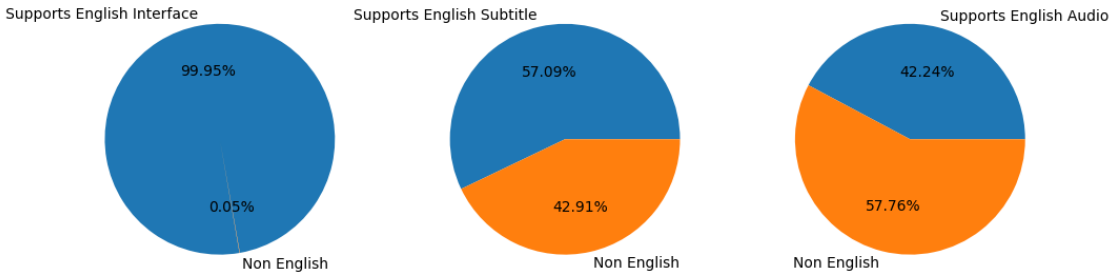

Top 10 Interface Languages
Portuguese - Brazil
Korean
Italian
Japanese
Russian
Spanish - Spain
Simplified Chinese
French
German
English
0
5000
10000
15000
20000
25000
Total


Top 10 Subtitle Languages
Traditional Chinese
Korean
Italian
Japanese
Spanish - Spain
Russian
French
German
Simplified Chinese
English
0
2000
4000
6000
8000
10000
12000
14000
Total


Top 10 Audio Languages
Polish
Portuguese - Brazil
Italian
Simplified Chinese
Spanish - Spain
Russian
French
German
Japanese
English
0
2000
4000
6000
8000
10000
Total

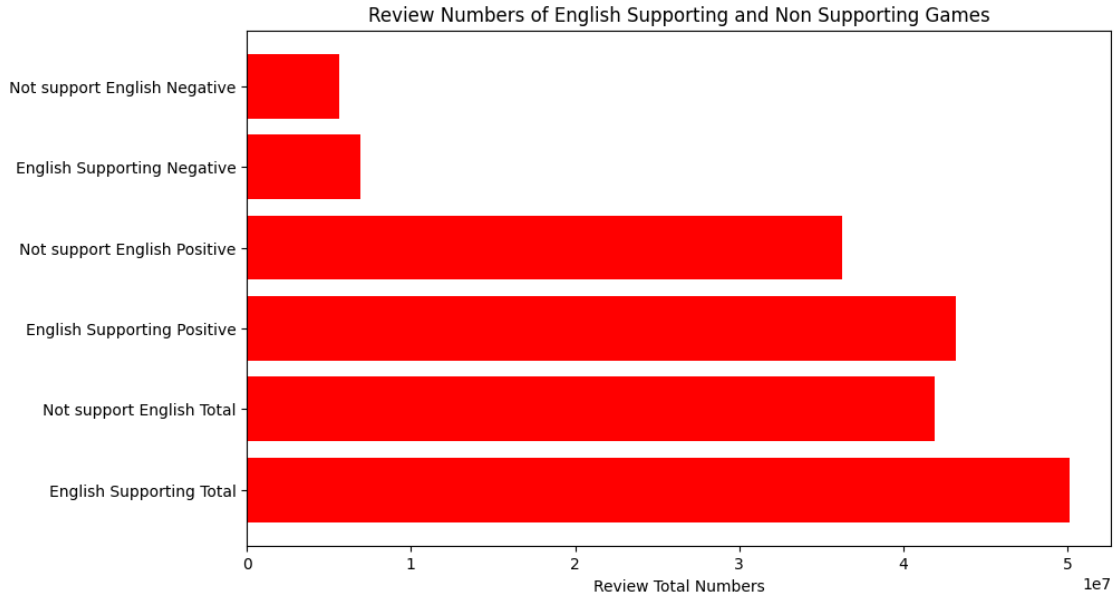
1.5.2 English Supporting Games

[93]:
```
enInSupNum = df.loc[df["lanInterface"].str.contains("English", case=False,␣
 ↪na=False), "lanInterface"].count()
enSubSupNum = df.loc[df["lanSubtitle"].str.contains("English", case=False,␣
 ↪na=False), "lanSubtitle"].count()
enAudSupNum = df.loc[df["LanAudio"].str.contains("English", case=False,␣
 ↪na=False), "LanAudio"].count()
totalNum = len(df)

# Create 3 column figure
fig, axes = plt.subplots(nrows=1, ncols=3, figsize=(12, 5))

# First plot --------------------

enLabels = ["Supports English Interface", "Non English"]
xy = np.array([enInSupNum, totalNum-enInSupNum])
axes[0].pie(xy, labels = enLabels, startangle=-80, autopct='%1.2f%%')

# Second plot ---------------------
enLabels = ["Supports English Subtitle", "Non English"]
xy = np.array([enSubSupNum, totalNum-enSubSupNum])
axes[1].pie(xy, labels = enLabels, autopct='%1.2f%%')

# Third plot --------------------------
enLabels = ["Supports English Audio", "Non English"]
xy = np.array([enAudSupNum, totalNum-enAudSupNum])
axes[2].pie(xy, labels = enLabels, autopct='%1.2f%%')

# Show the graphic
plt.show()
```



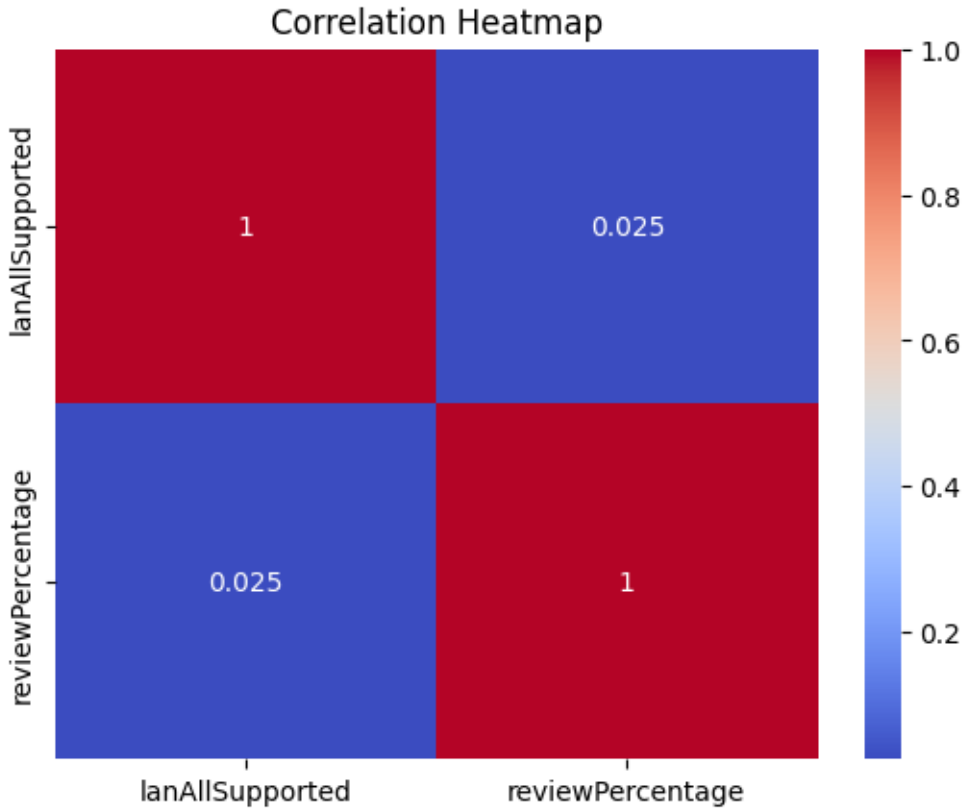
1.6 Total review of English supported games and not supported

[95]:
```
df_eng = df[df["reviewTotal"] > 100]
enSupRevTotal = df_eng.loc[df_eng["lanSubtitle"].str.contains("English"),␣
 ↪"reviewTotal"].sum()
enSupPosTotal = df_eng.loc[df_eng["lanSubtitle"].str.contains("English"),␣
 ↪"reviewPositive"].sum()
enSupNegTotal = df_eng.loc[df_eng["lanSubtitle"].str.contains("English"),␣
 ↪"reviewNegative"].sum()

nenSupRevTotal = df_eng.loc[~df_eng["lanSubtitle"].str.contains("English"),␣
 ↪"reviewTotal"].sum()
nenSupPosTotal = df_eng.loc[~df_eng["lanSubtitle"].str.contains("English"),␣
 ↪"reviewPositive"].sum()
nenSupNegTotal = df_eng.loc[~df_eng["lanSubtitle"].str.contains("English"),␣
 ↪"reviewNegative"].sum()

enSupport = ["English Supporting Total", "Not support English Total","English␣
 ↪Supporting Positive", "Not support English Positive", "English Supporting␣
 ↪Negative", "Not support English Negative"]
enSupportValues = [enSupRevTotal, nenSupRevTotal, enSupPosTotal,␣
 ↪nenSupPosTotal, enSupNegTotal, nenSupNegTotal]

fig = plt.figure(figsize=(10,6))
ax = fig.add_subplot()
ax.barh(enSupport, enSupportValues, color='Red')
ax.set_xlabel("Review Total Numbers")
ax.set_title("Review Numbers of English Supporting and Non Supporting Games")
plt.show()
```



1.6.1 Supported Language Number and positive review percentage correlation

[94]:
```
corrMatrix =  df[["lanAllSupported", "reviewPercentage"]].corr()
sns.heatmap(corrMatrix, annot=True, cmap="coolwarm")
plt.title("Correlation Heatmap")
plt.show()
```



[ ]:
```

```

1.7 Features

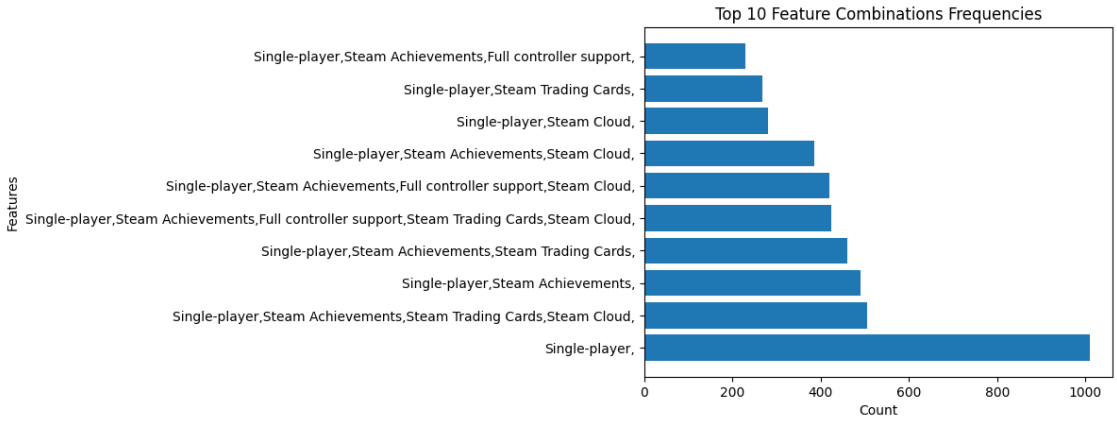
[96]:
```
feature_counts = df.loc[df["reviewTotal"] > 100, "features"].value_counts()
feature_counts_df = pd.DataFrame({'Features': feature_counts.index, 'Count':␣
↪feature_counts.values})
feature_counts_df = feature_counts_df.sort_values(by='Count', ascending=False)
feature_counts_df['Count'] = feature_counts_df['Count'].astype(int)
feature_counts_df.loc[feature_counts_df["Count"] > 10].head(10)
```

[96]:

	Features	Count
0	Single-player,	1011
1	Single-player,Steam Achievements,Steam Trading…	506
2	Single-player,Steam Achievements,	490
3	Single-player,Steam Achievements,Steam Trading…	460
4	Single-player,Steam Achievements,Full controll…	424
5	Single-player,Steam Achievements,Full controll…	420
6	Single-player,Steam Achievements,Steam Cloud,	386
7	Single-player,Steam Cloud,	281
8	Single-player,Steam Trading Cards,	268
9	Single-player,Steam Achievements,Full controll…	229

1.7.1 Top 10 Features Combinations

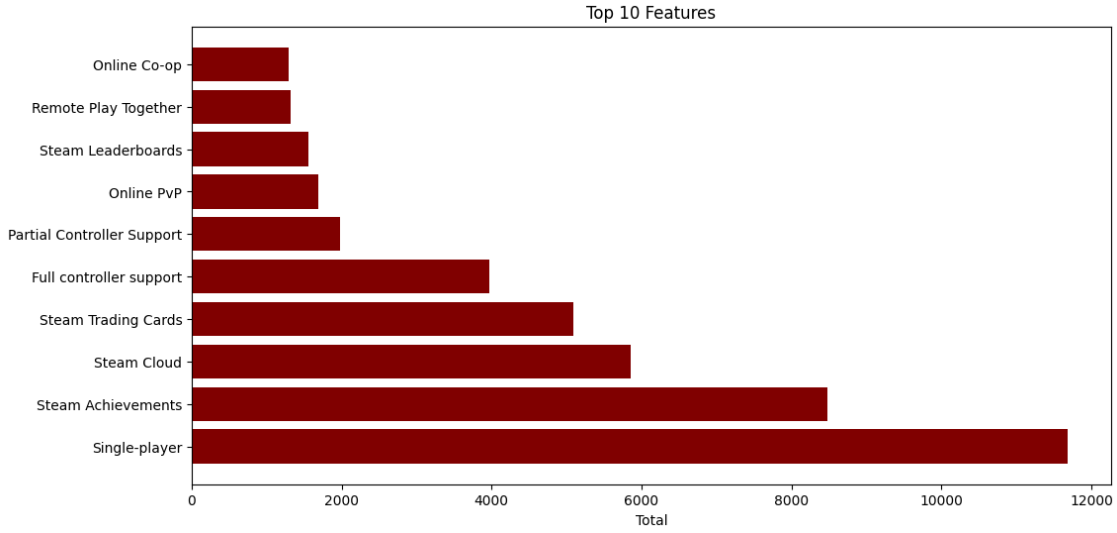
[97]:
```
plt.barh(feature_counts_df['Features'].head(10), feature_counts_df['Count'].
↪head(10))

plt.ylabel('Features')
plt.xlabel('Count')
plt.title('Top 10 Feature Combinations Frequencies')

plt.xticks(rotation=0)

plt.show()
```



1.7.2 Top 10 Features

[98]:
```
features = []
def adFe(x):
    for i in x:
        features.append(i)
```

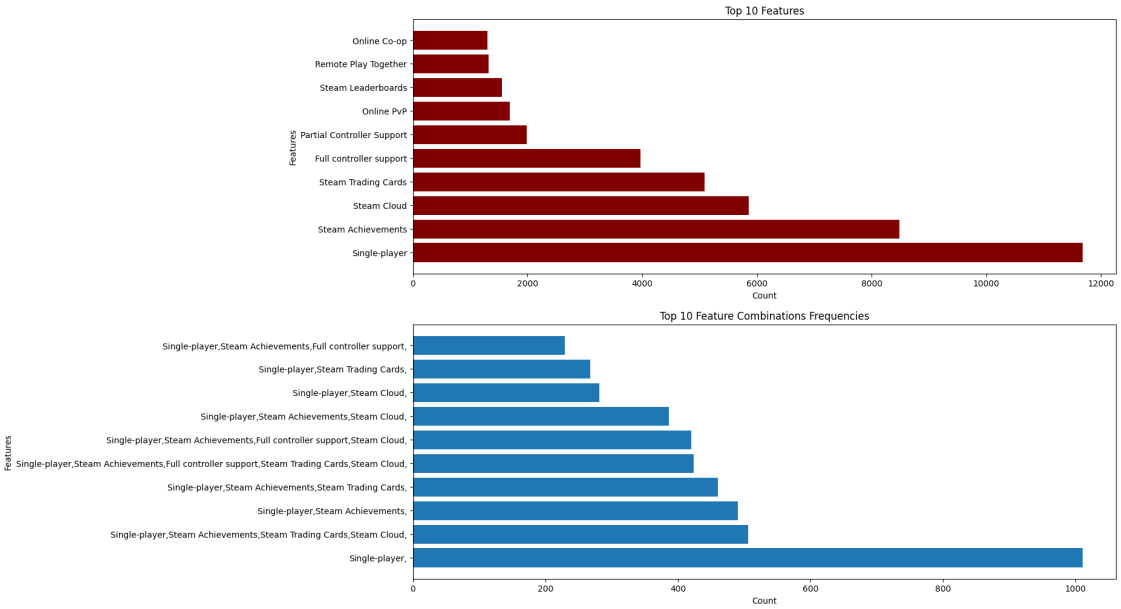
```
dfFeatures = df.loc[df["reviewTotal"] > 100, "features"].str.split(",")
dfFeatures.apply(adFe)
dfFeatures = pd.DataFrame(data=pd.Series(features), columns=["features"])
dfFeatures = dfFeatures[dfFeatures["features"] != ""]
dfFeatures.reset_index(drop=True, inplace=True)
dfFeatures = dfFeatures["features"].value_counts().head(10)

fig = plt.figure(figsize=(12, 6))
ax = fig.add_subplot()
ax.barh(dfFeatures.index, dfFeatures.values, color='maroon')
ax.set_xlabel("Total")
ax.set_title("Top 10 Features")

plt.show()
```



1.7.3 Compairing Features Combination Count and Single Feature Count

[99]:
```
#Create Figure
fig, ax = plt.subplots(nrows=2, ncols=1 ,figsize=(15, 12))

#bar 1
ax[0].barh(dfFeatures.index, dfFeatures.values, color='maroon')
ax[0].set_ylabel('Features')
ax[0].set_xlabel('Count')
ax[0].set_title('Top 10 Features')

#bar 2
ax[1].barh(feature_counts_df['Features'].head(10), feature_counts_df['Count'].
 ↪head(10))
```

```
ax[1].set_ylabel('Features')
ax[1].set_xlabel('Count')
ax[1].set_title('Top 10 Feature Combinations Frequencies')

plt.show()
```



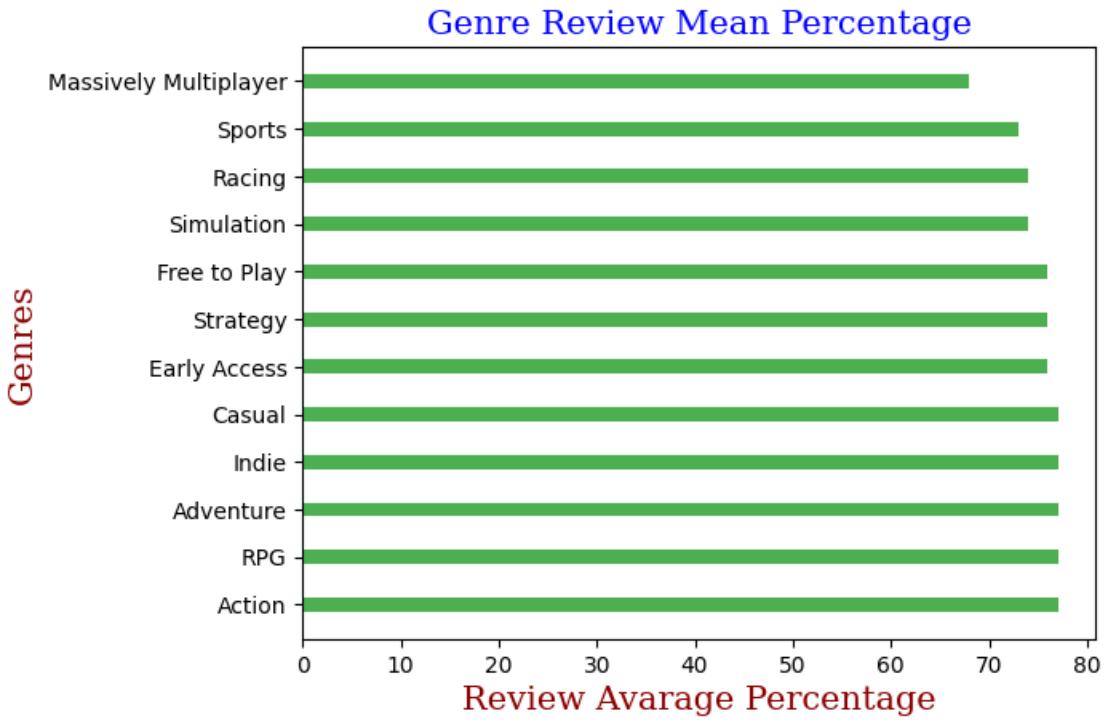
1.8 Genre Analysis

1.9 Splitting genre column to examine the number and positive review percentage by genre

[100]:
```
genreSeries = pd.Series(df["genre"].str.split(","))
genreSeries.reset_index(drop=True, inplace=True)

genres = []

for i in range(len(genreSeries)):
    for j in range(len(genreSeries[i])):
        genre = genreSeries[i][j]
        if genre not in genres and genre != None and genre != "":
            genres.append(genre)


d = {"count":0,"reviewMean":0,"reviewTotal":0}
genreDF = pd.DataFrame(data=d, index=genres)

for index, row in genreDF.iterrows():
```

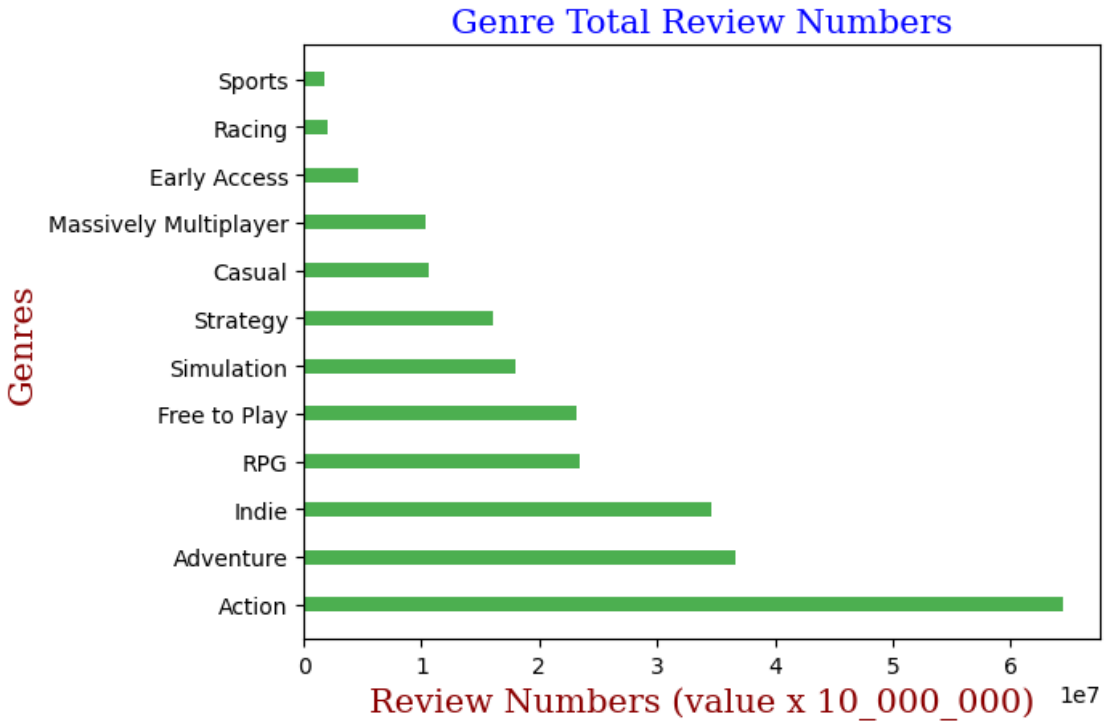
```
    row["count"] = df.loc[df["genre"].str.contains(index), "genre"].count()
    row["reviewMean"] = int(df.loc[df["genre"].str.contains(index),␣
 ↪"reviewPercentage"].mean())
    row["reviewTotal"] = df.loc[df["genre"].str.contains(index), "reviewTotal"].
 ↪sum()
```

[101]:
```
genreDF = genreDF.sort_values(["reviewMean"], ascending=False)
plt.barh(genreDF[genreDF["count"] > 10].index, genreDF.loc[genreDF["count"] >␣
 ↪10, "reviewMean"], color = "#4CAF50", height = 0.3)

font1 = {'family':'serif','color':'blue','size':15}
font2 = {'family':'serif','color':'darkred','size':15}
#font3 = {'family':'serif','color':'green','size':5}

plt.title("Genre Review Mean Percentage", fontdict = font1)
plt.xlabel("Review Avarage Percentage", fontdict = font2)
plt.ylabel("Genres", fontdict = font2)

plt.show()
```



1.9.1 Most Reviewed Genres

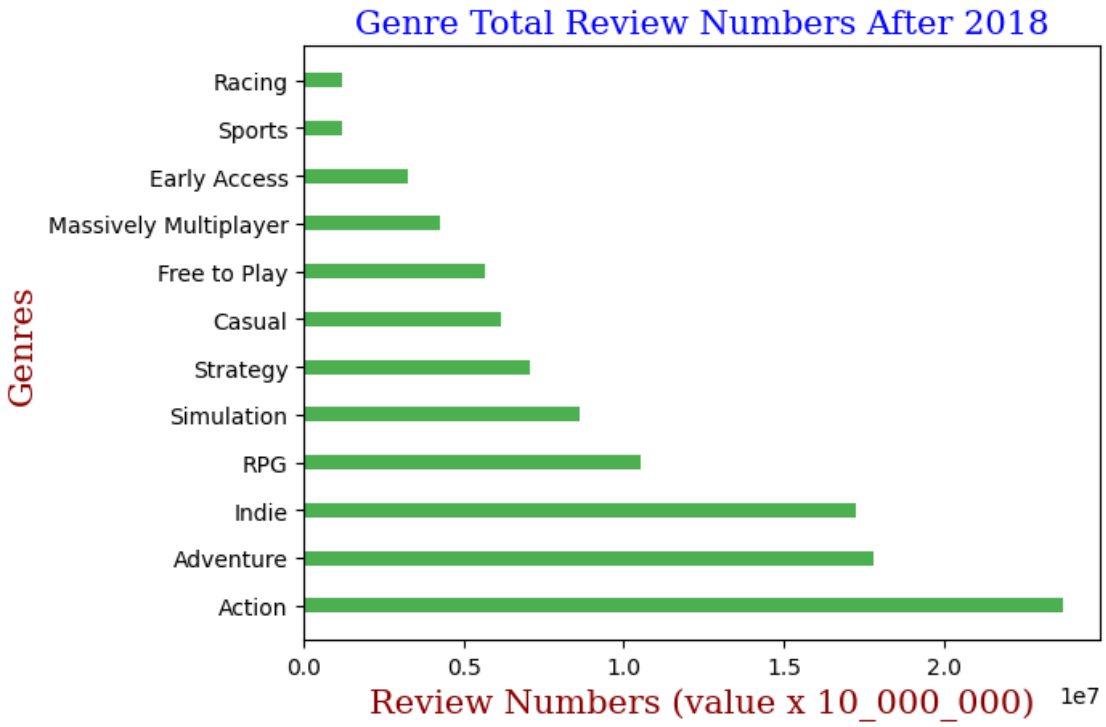
[102]:
```
genreDF = genreDF.sort_values(["reviewTotal"], ascending=False)
plt.barh(genreDF[genreDF["reviewTotal"] > 1000].index, genreDF.
 ↪loc[genreDF["reviewTotal"] > 1000, "reviewTotal"], color = "#4CAF50", height␣
 ↪= 0.3)

font1 = {'family':'serif','color':'blue','size':15}
font2 = {'family':'serif','color':'darkred','size':15}
#font3 = {'family':'serif','color':'green','size':5}

plt.title("Genre Total Review Numbers", fontdict = font1)
plt.xlabel("Review Numbers (value x 10_000_000)", fontdict = font2)
plt.ylabel("Genres", fontdict = font2)

plt.show()
```



1.9.2 Most Reviewed Genres after 2018

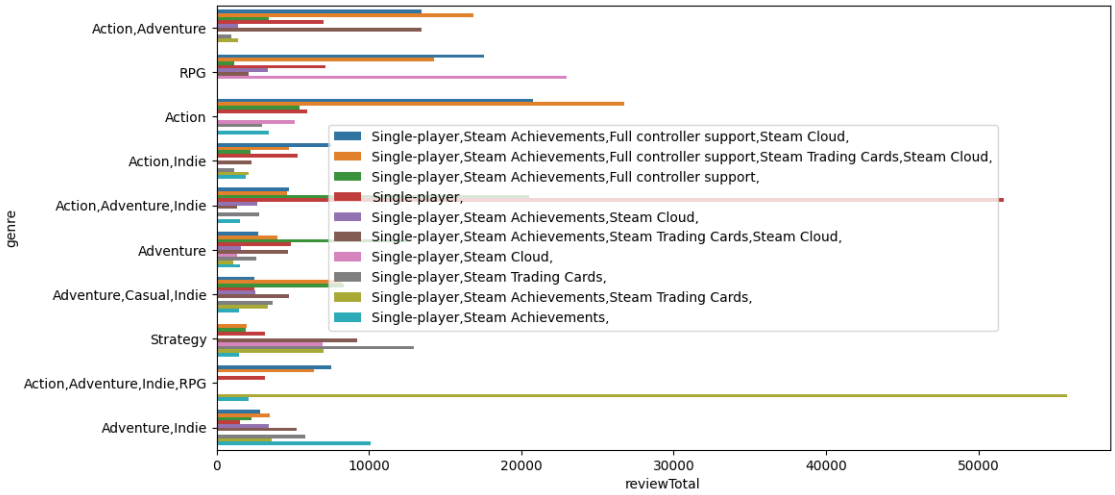
[103]:
```
date_before = datetime.datetime(2018, 1, 1)
genDF2K18 = df[df["releaseDate"] >= date_before]

genreSeries = pd.Series(genDF2K18["genre"].str.split(","))
genreSeries.reset_index(drop=True, inplace=True)
```

```
genres = []

for i in range(len(genreSeries)):
    for j in range(len(genreSeries[i])):
        genre = genreSeries[i][j]
        if genre not in genres and genre != None and genre != "":
            genres.append(genre)


d = {"count":0,"reviewMean":0,"reviewTotal":0}
genreDF = pd.DataFrame(data=d, index=genres)

for index, row in genreDF.iterrows():
    row["count"] = genDF2K18.loc[genDF2K18["genre"].str.contains(index),␣
 ↪"genre"].count()
    row["reviewMean"] = int(genDF2K18.loc[genDF2K18["genre"].str.
 ↪contains(index), "reviewPercentage"].mean())
    row["reviewTotal"] = genDF2K18.loc[genDF2K18["genre"].str.contains(index),␣
 ↪"reviewTotal"].sum()

genreDF = genreDF.sort_values(["reviewTotal"], ascending=False)
plt.barh(genreDF[genreDF["reviewTotal"] > 1000].index, genreDF.
 ↪loc[genreDF["reviewTotal"] > 1000, "reviewTotal"], color = "#4CAF50", height␣
 ↪= 0.3)

font1 = {'family':'serif','color':'blue','size':15}
font2 = {'family':'serif','color':'darkred','size':15}
#font3 = {'family':'serif','color':'green','size':5}

plt.title("Genre Total Review Numbers After 2018", fontdict = font1)
plt.xlabel("Review Numbers (value x 10_000_000)", fontdict = font2)
plt.ylabel("Genres", fontdict = font2)

plt.show()
```



1.10 Genres and Features

[104]:
```
genreCounts = df.loc[df["reviewTotal"] > 1000, "genre"].value_counts()

arrGenre = genreCounts.head(10).index
arrFeature = feature_counts.head(10).index

genreFeatureDF = df.loc[(df["reviewTotal"] > 1000) & (df["features"].
 ↪isin(arrFeature)) & (df["genre"].isin(arrGenre))]

fig = plt.figure(figsize=(12,6))
ax = fig.add_subplot()

sns.barplot(x="reviewTotal", y="genre", hue="features", errorbar=None,␣
 ↪data=genreFeatureDF, ax=ax)

handles, labels = ax.get_legend_handles_labels()
handles = handles[:10]
labels = labels[:10]

ax.legend(handles, labels, loc="center")

plt.show()
```



1.11 Analysis of paid and free games

[105]:
```
dfFree = df.loc[df["price"].str.contains("Free", case=False) & ~df["price"].str.
↪contains("Demo", case=False) & ~df["price"].str.contains("Trial",␣
↪case=False)]
dfFree = dfFree[dfFree["reviewTotal"] > 100]
dfFree.describe().T
```

[105]:

	count	mean	min	\
lanAllSupported	1156.0	6.115917	1.0	
releaseDate	1156	2019-06-13 15:47:57.508650496	1996-09-06 00:00:00	
reviewTotal	1156.0	14002.66263	101.0	
reviewPositive	1156.0	10970.525952	30.0	
reviewNegative	1156.0	3032.136678	1.0	
reviewPercentage	1156.0	78.782007	19.0	

	25%	50%	\
lanAllSupported	1.0	2.0	
releaseDate	2017-09-20 06:00:00	2020-02-07 00:00:00	
reviewTotal	240.75	817.5	
reviewPositive	188.0	643.0	
reviewNegative	42.0	133.5	
reviewPercentage	70.75	81.0	

	75%	max	std
lanAllSupported	9.0	103.0	10.318917
releaseDate	2021-10-20 06:00:00	2023-07-06 00:00:00	NaN
reviewTotal	3749.25	2192724.0	101420.402536
reviewPositive	2964.75	1652303.0	75231.892925
reviewNegative	611.0	936657.0	31047.517201

```
reviewPercentage                 89.0                  99.0       13.737649
```

[106]:
```
dfPaid = df[df["price"].str.contains("|".join(["TL","Trial","Demo"]),␣
 ↪case=False)]
dfPaid = dfPaid[dfPaid["reviewTotal"] > 100]
dfPaid.describe().T
```

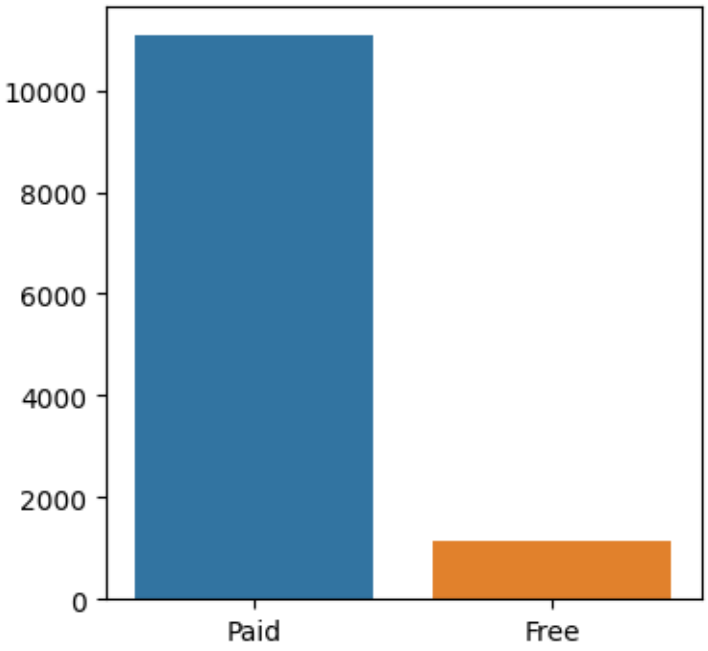
[106]:
```
                    count                           mean                  min  \
lanAllSupported   11081.0                       6.774208                  1.0
releaseDate         11081  2017-12-19 16:44:47.410883584  1983-06-19 00:00:00
reviewTotal       11081.0                    6820.968324                101.0
reviewPositive    11081.0                    6005.857504                 16.0
reviewNegative    11081.0                     815.11082                  0.0
reviewPercentage  11081.0                      81.07012                 10.0

                                  25%                  50%  \
lanAllSupported                   1.0                  5.0
releaseDate       2016-02-18 00:00:00  2018-10-30 00:00:00
reviewTotal                     220.0                541.0
reviewPositive                  171.0                439.0
reviewNegative                   36.0                 91.0
reviewPercentage                 75.0                 84.0

                                  75%                  max           std
lanAllSupported                   9.0                103.0      9.862196
releaseDate       2021-06-01 00:00:00  2023-06-29 00:00:00           NaN
reviewTotal                    2016.0            7327687.0  79491.727395
reviewPositive                 1669.0            6502966.0  70820.061466
reviewNegative                  298.0             824721.0   9291.974704
reviewPercentage                 91.0                100.0     13.176011
```

[107]:
```
dfFree["price"].count()
```

[107]:
```
1156
```

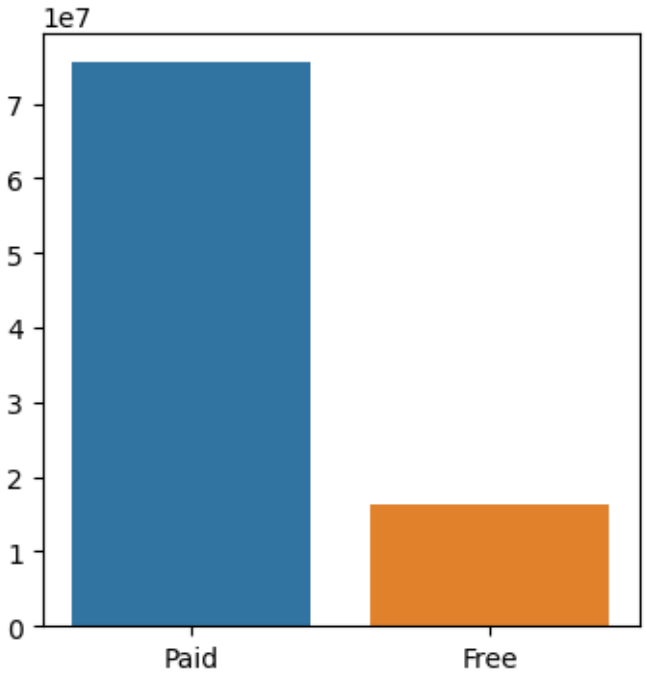
1.11.1 Total Numbers of Paid and Free Games with more than 100 total reviews

[108]:
```
fig, ax = plt.subplots(figsize=(4,4))

sns.barplot(x=["Paid","Free"],y=[dfPaid["price"].count(),dfFree["price"].
 ↪count()], ax=ax)

plt.show()
```



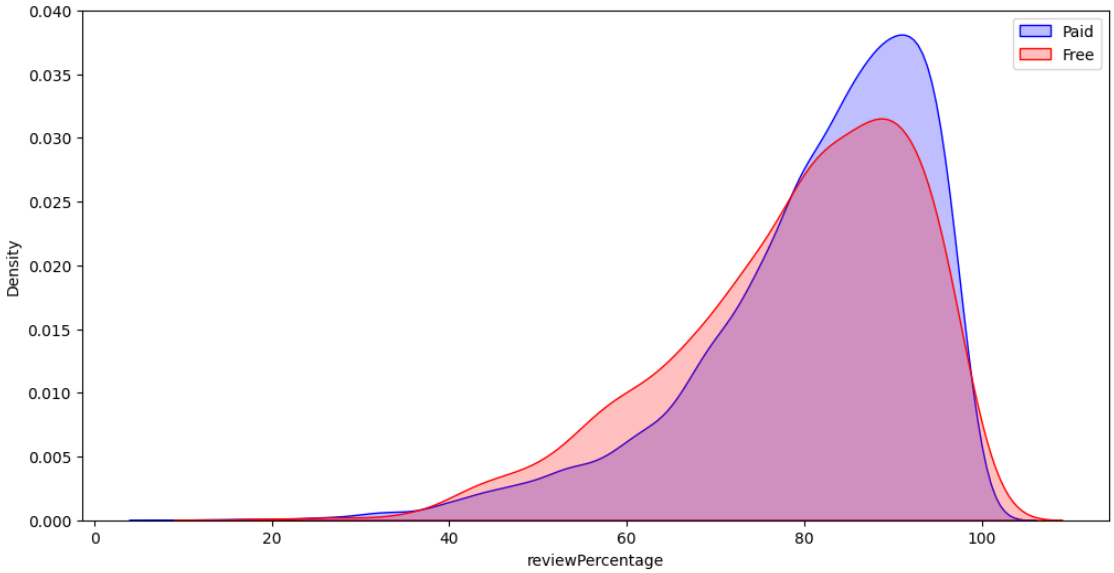
1.11.2 Total Review Numbers of Paid and Free Games with more than 100 total reviews

[111]:
```
fig, ax = plt.subplots(figsize=(4,4))

sns.barplot(x=["Paid","Free"],y=[dfPaid["reviewTotal"].
 ↪sum(),dfFree["reviewTotal"].sum()], ax=ax)

plt.show()
```



1.11.3 Review Percentage Density of Paid and Free Games

[110]:
```
fig, ax = plt.subplots(figsize=(12,6))

sns.kdeplot(dfPaid["reviewPercentage"], fill=True, color="blue", label="Paid",␣
 ↪ax=ax)
sns.kdeplot(dfFree["reviewPercentage"], fill=True, color="red", label="Free",␣
 ↪ax=ax)

ax.legend()

plt.show()
```


Paid
Free
Density
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0
20
40
60
80
100
reviewPercentage