

```
In [21]: import numpy as np  
import pandas as pd  
import seaborn as sns  
import matplotlib.pyplot as plt
```

```
In [23]: steam_data = pd.read_csv('steamcharts.csv')  
  
steam_data
```

Out[23]:

	month	avg_players	gain	gain_percent	peak_players	name	steam_id
0	Sep-25	7805.25	883.12	0.1276	13254	Counter-Strike	
1	Aug-25	6922.13	-449.35	-0.0610	12168	Counter-Strike	
2	Jul-25	7371.48	-833.5	-0.1016	13951	Counter-Strike	
3	Jun-25	8204.98	-847.53	-0.0936	15798	Counter-Strike	
4	May-25	9052.51	-471.31	-0.0495	15333	Counter-Strike	
...
612260	Apr-25	2.48	-0.92	-0.2709	8	The Ditzy Demons Are in Love With Me	8
612261	Mar-25	3.40	-0.19	-0.0532	11	The Ditzy Demons Are in Love With Me	8
612262	Feb-25	3.59	-0.65	-0.1527	12	The Ditzy Demons Are in Love With Me	8
612263	Jan-25	4.23	-0.53	-0.1119	11	The Ditzy Demons Are in Love With Me	8
612264	Dec-24	4.77	0.78	0.1950	13	The Ditzy Demons Are in Love With Me	8

612265 rows × 7 columns



1. Data preparation

In [5]: `steam_data.isnull().sum()`

```
Out[5]: month      0
        avg_players  0
        gain         0
        gain_percent 0
        peak_players  0
        name         0
        steam_appid   0
        dtype: int64
```

No null values!

```
In [10]: steam_data.duplicated().sum()
```

```
Out[10]: np.int64(0)
```

No duplicated rows!

```
In [15]: # count of rows where avg_players value is negative
(steam_data['avg_players'] < 0).sum()
```

```
Out[15]: np.int64(0)
```

```
In [16]: # count of rows where peak_players value is negative
(steam_data['peak_players'] < 0).sum()
```

```
Out[16]: np.int64(0)
```

```
In [18]: # count of rows where avg_players is higher than peak value is negative
(steam_data['peak_players'] < steam_data['avg_players']).sum()
```

```
Out[18]: np.int64(0)
```

```
In [22]: # count of rows where gain_percent is lower than zero
(steam_data['gain_percent'] < -1).sum()
```

```
Out[22]: np.int64(0)
```

```
In [36]: # count of rows where name is empty
(steam_data['name'].str.strip() == '').sum()
```

```
Out[36]: np.int64(0)
```

No invalid values!

2. Analysis

```
In [45]: plt.figure(figsize=(14, 8))

plt.barh(
    top20_games['name'],
    top20_games['peak_players']
)
```

```

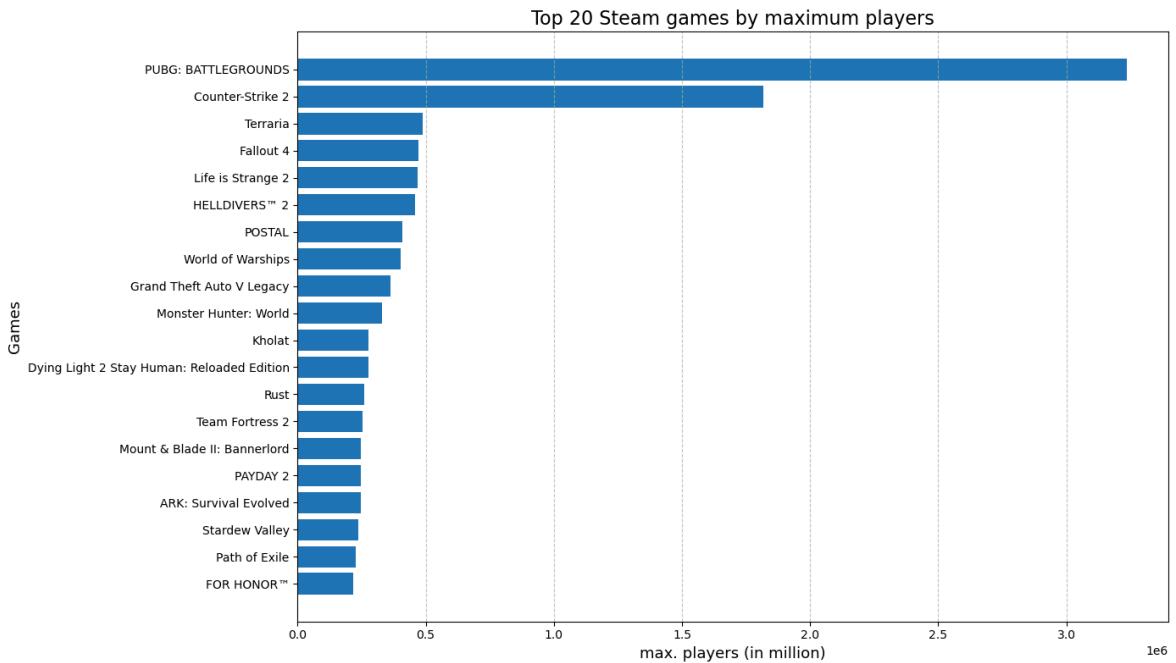
plt.xlabel('max. players (in million)', fontsize=13)
plt.ylabel('Games', fontsize=13)
plt.title('Top 20 Steam games by maximum players', fontsize=16)

# Highest value on top
plt.gca().invert_yaxis()

# Add grid for readability
plt.grid(axis='x', linestyle='--', alpha=0.7)

plt.tight_layout()
plt.show()

```



```

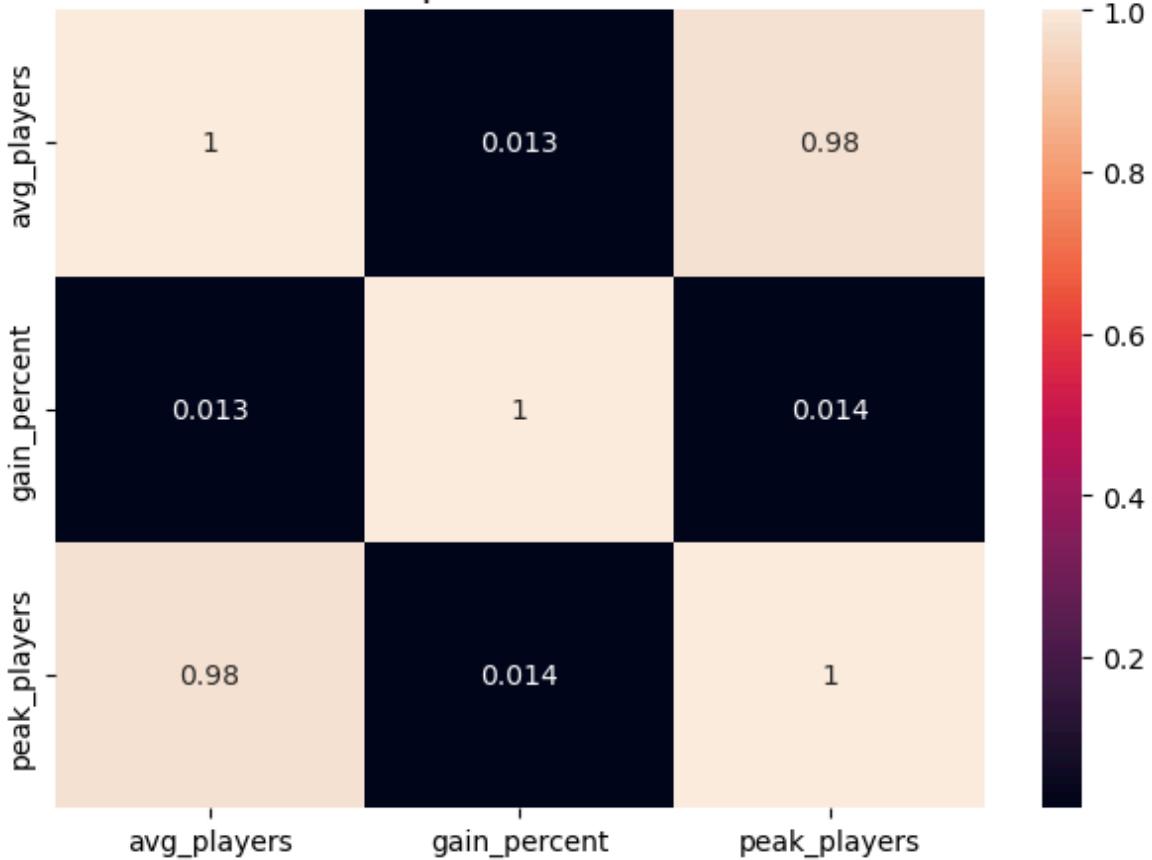
In [42]: numeric_data = steam_data.select_dtypes(include='number')
numeric_data = numeric_data.drop(columns=['steam_appid'], errors='ignore')

sns.heatmap(
    numeric_data.corr(),
    annot=True,
)

plt.title('Correlation Heatmap of Numeric Steam Variables', fontsize=14)
plt.tight_layout()
plt.show()

```

Correlation Heatmap of Numeric Steam Variables



```
In [43]: steam_data['month_dt'] = pd.to_datetime(
    steam_data['month'],
    format='%b-%y'
)

# Get Top 10 games by all-time peak players
top10_names = (
    steam_data
    .groupby('name')['peak_players']
    .max()
    .sort_values(ascending=False)
    .head(10)
    .index
)

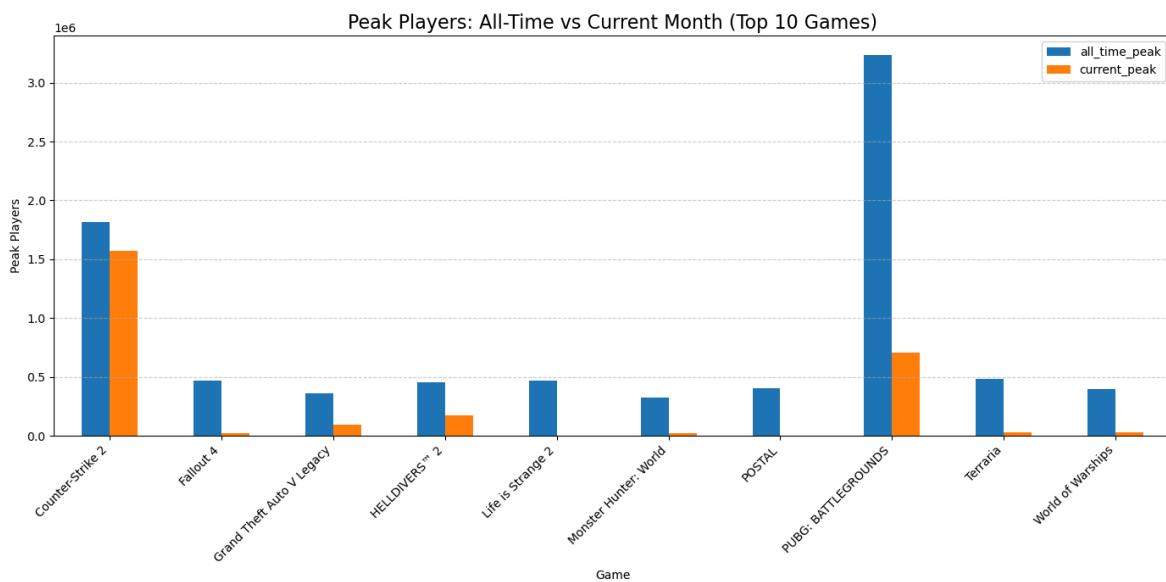
latest_month = steam_data['month_dt'].max()

comparison = (
    steam_data[steam_data['name'].isin(top10_names)]
    .groupby('name')
    .agg(
        all_time_peak=('peak_players', 'max'),
        current_peak=('peak_players', lambda x: x[steam_data.loc[x.index,
    ])
    .dropna()
)

comparison.plot(
    kind='bar',
    figsize=(14, 7)
```

```
)
plt.title('Peak Players: All-Time vs Current Month (Top 10 Games)', fontweight='bold')
plt.ylabel('Peak Players')
plt.xlabel('Game')
plt.xticks(rotation=45, ha='right')
plt.grid(axis='y', linestyle='--', alpha=0.6)

plt.tight_layout()
plt.show()
```



```
In [46]: release_dates = (
    steam_data
        .groupby('name')['month_dt']
        .min()
        .reset_index(name='release_month')
)

steam_data = steam_data.merge(release_dates, on='name')

steam_data['game_type'] = np.where(
    steam_data['release_month'].dt.year <= 2015,
    'Classic',
    np.where(
        steam_data['release_month'].dt.year >= 2020,
        'New',
        'Middle'
    )
)

plt.figure(figsize=(10, 6))

sns.boxplot(
    data=steam_data[steam_data['game_type'].isin(['Classic', 'New'])],
    x='game_type',
    y='peak_players'
)

plt.title('Peak Player Distribution: Classic vs New Games', fontsize=16)
plt.xlabel('Game Type')
plt.ylabel('Peak Players')
plt.grid(axis='y', linestyle='--', alpha=0.6)
```

```
plt.tight_layout()  
plt.show()
```

