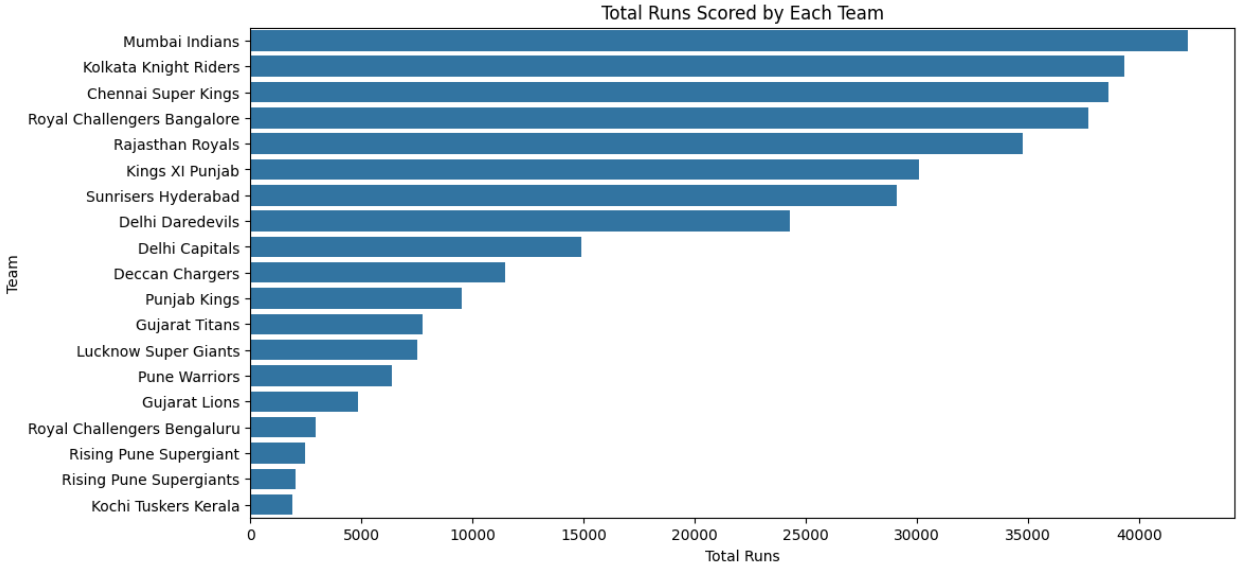
```python
#FINOVA ML TAK 1 (BEGINNER)
#THARUN ADITHYAN
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
df = pd.read_csv("deliveries.csv")
df
```

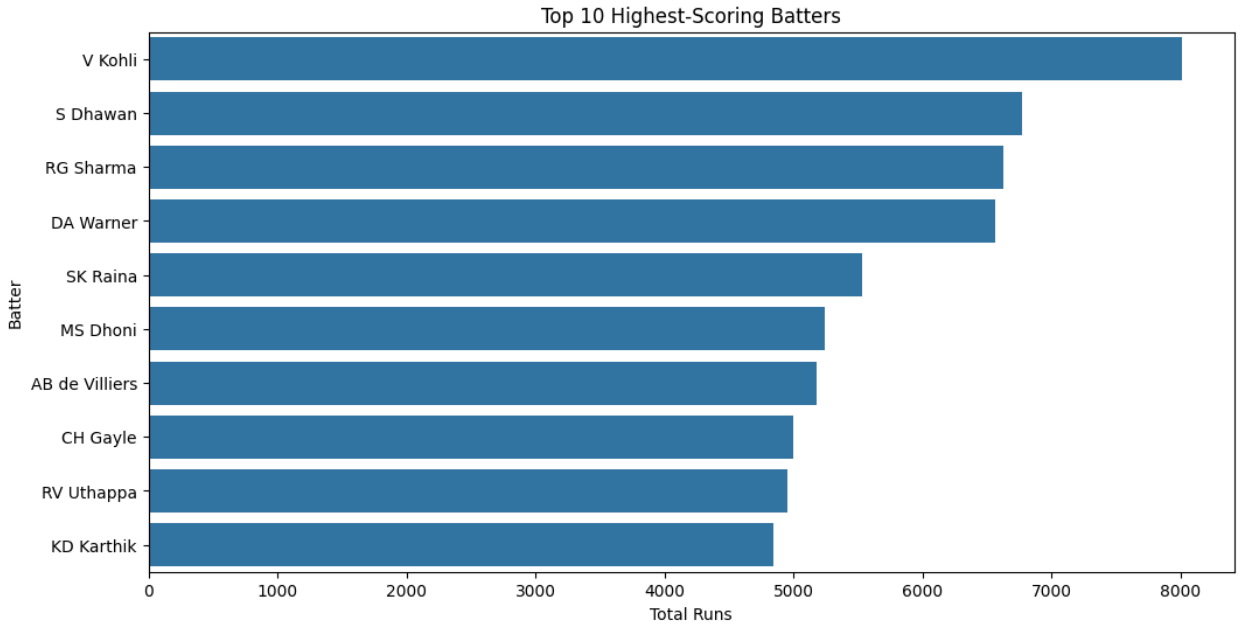
```
        match_id  inning           batting_team
bowling_team  \
0         335982       1  Kolkata Knight Riders  Royal Challengers
Bangalore
1         335982       1  Kolkata Knight Riders  Royal Challengers
Bangalore
2         335982       1  Kolkata Knight Riders  Royal Challengers
Bangalore
3         335982       1  Kolkata Knight Riders  Royal Challengers
Bangalore
4         335982       1  Kolkata Knight Riders  Royal Challengers
Bangalore
...          ...     ...                    ...
...
260915   1426312       2  Kolkata Knight Riders          Sunrisers
Hyderabad
260916   1426312       2  Kolkata Knight Riders          Sunrisers
Hyderabad
260917   1426312       2  Kolkata Knight Riders          Sunrisers
Hyderabad
260918   1426312       2  Kolkata Knight Riders          Sunrisers
Hyderabad
260919   1426312       2  Kolkata Knight Riders          Sunrisers
Hyderabad

        over  ball       batter          bowler  non_striker
batsman_runs  \
0          0     1   SC Ganguly        P Kumar  BB McCullum
0
1          0     2  BB McCullum        P Kumar   SC Ganguly
0
2          0     3  BB McCullum        P Kumar   SC Ganguly
0
3          0     4  BB McCullum        P Kumar   SC Ganguly
0
4          0     5  BB McCullum        P Kumar   SC Ganguly
0
...      ...   ...          ...            ...          ...
...
260915     9     5      SS Iyer     AK Markram      VR Iyer
1
260916     9     6      VR Iyer     AK Markram      SS Iyer
```

```
1
260917    10     1      VR Iyer  Shahbaz Ahmed      SS Iyer
1
260918    10     2      SS Iyer  Shahbaz Ahmed      VR Iyer
1
260919    10     3      VR Iyer  Shahbaz Ahmed      SS Iyer
1

        extra_runs  total_runs extras_type  is_wicket player_dismissed
\
0                1           1     legbyes          0               NaN

1                0           0         NaN          0               NaN

2                1           1       wides          0               NaN

3                0           0         NaN          0               NaN

4                0           0         NaN          0               NaN

...            ...         ...         ...        ...               ...

260915           0           1         NaN          0               NaN

260916           0           1         NaN          0               NaN

260917           0           1         NaN          0               NaN

260918           0           1         NaN          0               NaN

260919           0           1         NaN          0               NaN


       dismissal_kind fielder
0                 NaN     NaN
1                 NaN     NaN
2                 NaN     NaN
3                 NaN     NaN
4                 NaN     NaN
...               ...     ...
260915            NaN     NaN
260916            NaN     NaN
260917            NaN     NaN
260918            NaN     NaN
260919            NaN     NaN

[260920 rows x 17 columns]
```

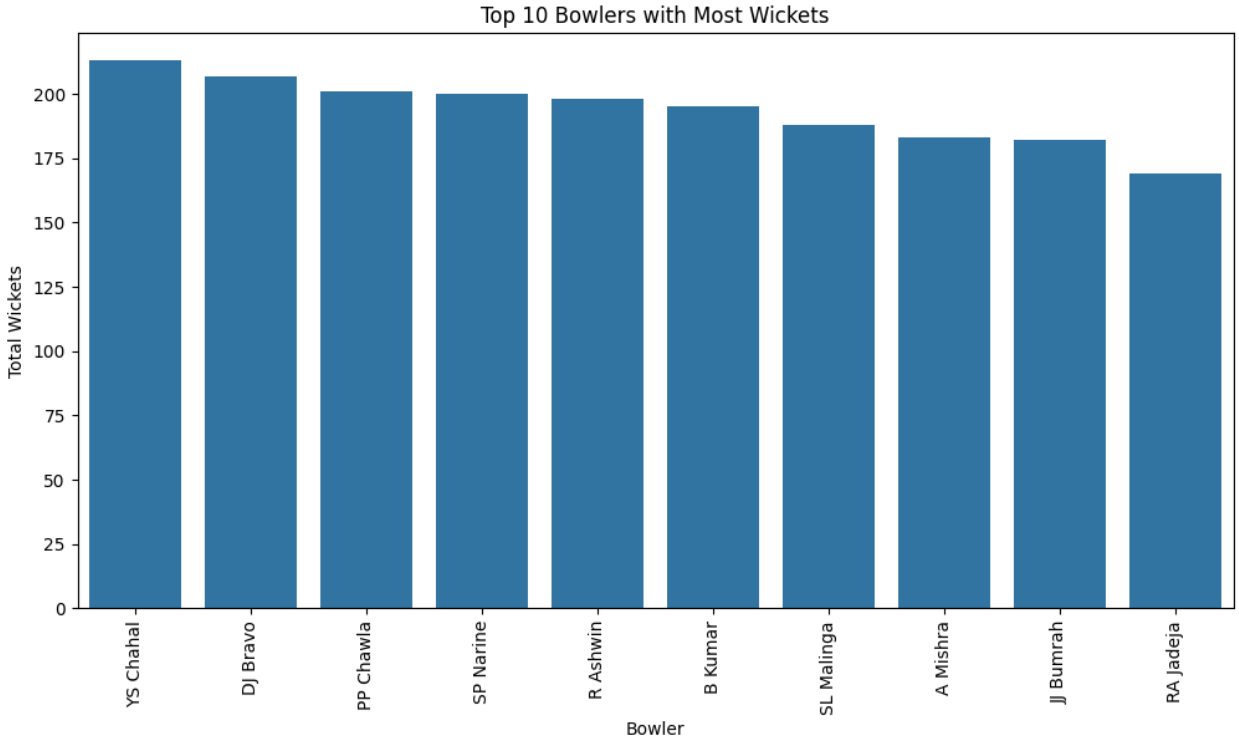
```
# 1. Find and visualize the total runs scored by each team.
team_runs = df.groupby("batting_team")
["total_runs"].sum().sort_values(ascending=False)
plt.figure(figsize=(12, 6))
sns.barplot(x=team_runs.values, y=team_runs.index)
plt.xlabel("Total Runs")
plt.ylabel("Team")
plt.title("Total Runs Scored by Each Team")
plt.show()
```




```
# 2. Identify and display the names of the top 10 highest-scoring
batters with their total runs scored.
top_batters = df.groupby("batter")["batsman_runs"].sum().nlargest(10)
plt.figure(figsize=(12, 6))
sns.barplot(x=top_batters.values, y=top_batters.index)
plt.xlabel("Total Runs")
plt.ylabel("Batter")
plt.title("Top 10 Highest-Scoring Batters")
plt.show()
```

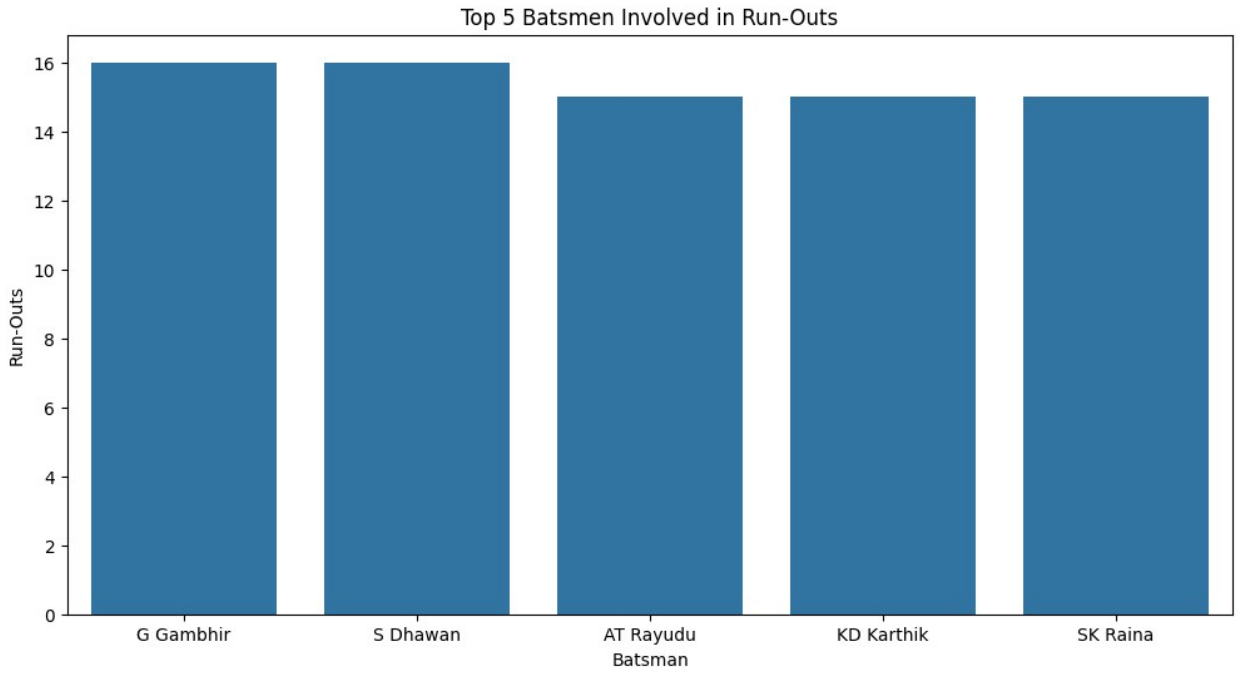



```
# 3. Find and visualize the top 10 bowlers with the most wickets.
top_bowlers = df[df["is_wicket"] == 1].groupby("bowler")
["is_wicket"].count().nlargest(10)
plt.figure(figsize=(12, 6))
sns.barplot(x=top_bowlers.index, y=top_bowlers.values)
plt.xticks(rotation=90)
plt.xlabel("Bowler")
plt.ylabel("Total Wickets")
plt.title("Top 10 Bowlers with Most Wickets")
plt.show()
```

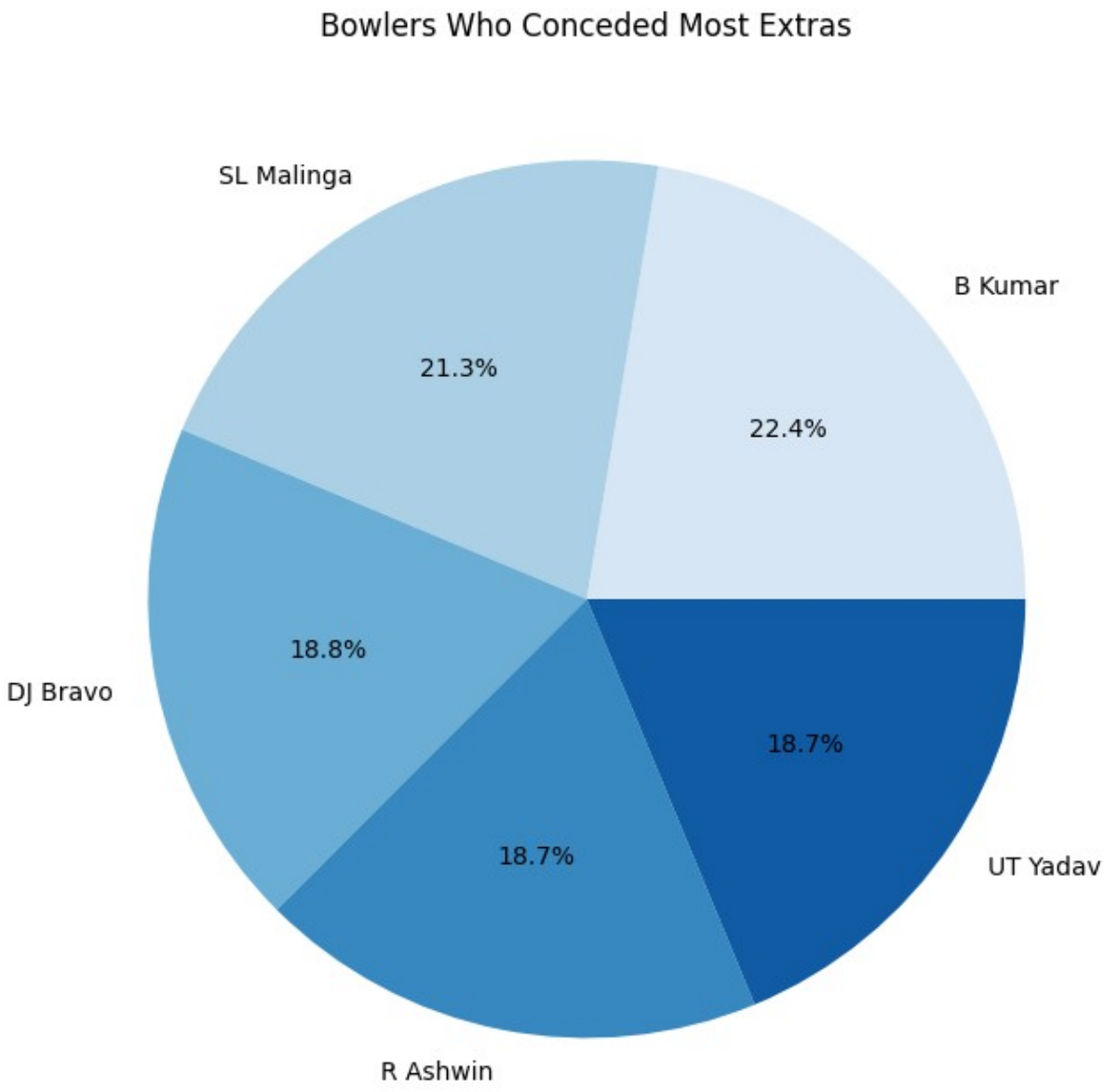



```
# 4. Tabulate and visualize the total number of extras conceded by
each team.
team_extras = df.groupby("bowling_team")
["extra_runs"].sum().sort_values(ascending=False)
plt.figure(figsize=(12, 6))
sns.heatmap(team_extras.to_frame(), annot=True, cmap="Greens",
fmt="d")
plt.title("Total Extras Conceded")
plt.show()
```

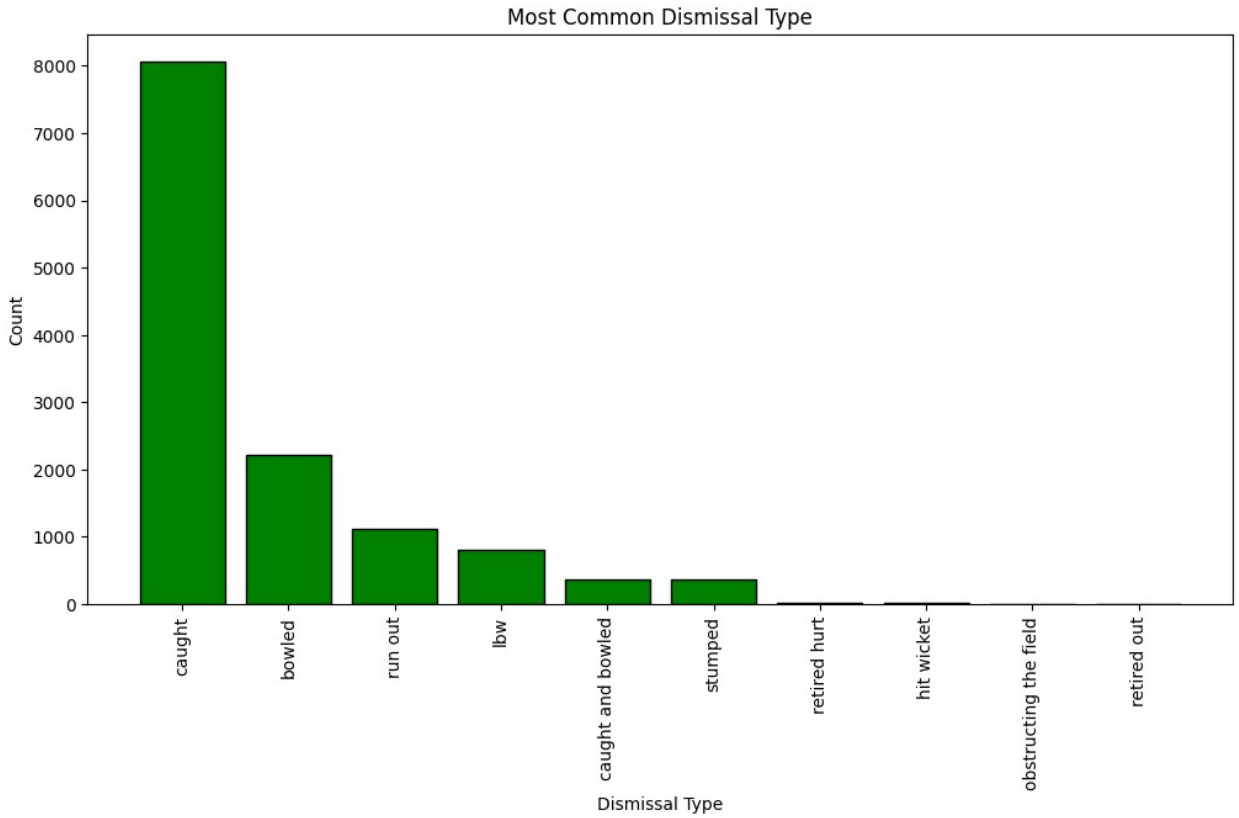

```
# 5. Tabulate and visualize the batsmen (top 5) involved in the most run-outs.
runouts = df[df["dismissal_kind"] == "run out"].groupby("player_dismissed")["dismissal_kind"].count().nlargest(5)
plt.figure(figsize=(12, 6))
sns.barplot(x=runouts.index, y=runouts.values)
plt.xlabel("Batsman")
plt.ylabel("Run-Outs")
plt.title("Top 5 Batsmen Involved in Run-Outs")
plt.show()
```




```
# 6. Tabulate and visualize the top 5 bowlers who conceded the most
extras.
top_extra_bowlers = df.groupby("bowler")
["extra_runs"].sum().nlargest(5)
plt.figure(figsize=(8, 8))
plt.pie(top_extra_bowlers.values, labels=top_extra_bowlers.index,
autopct='%1.1f%%', colors=sns.color_palette("Blues", 5))
plt.title("Bowlers Who Conceded Most Extras")
plt.show()
```

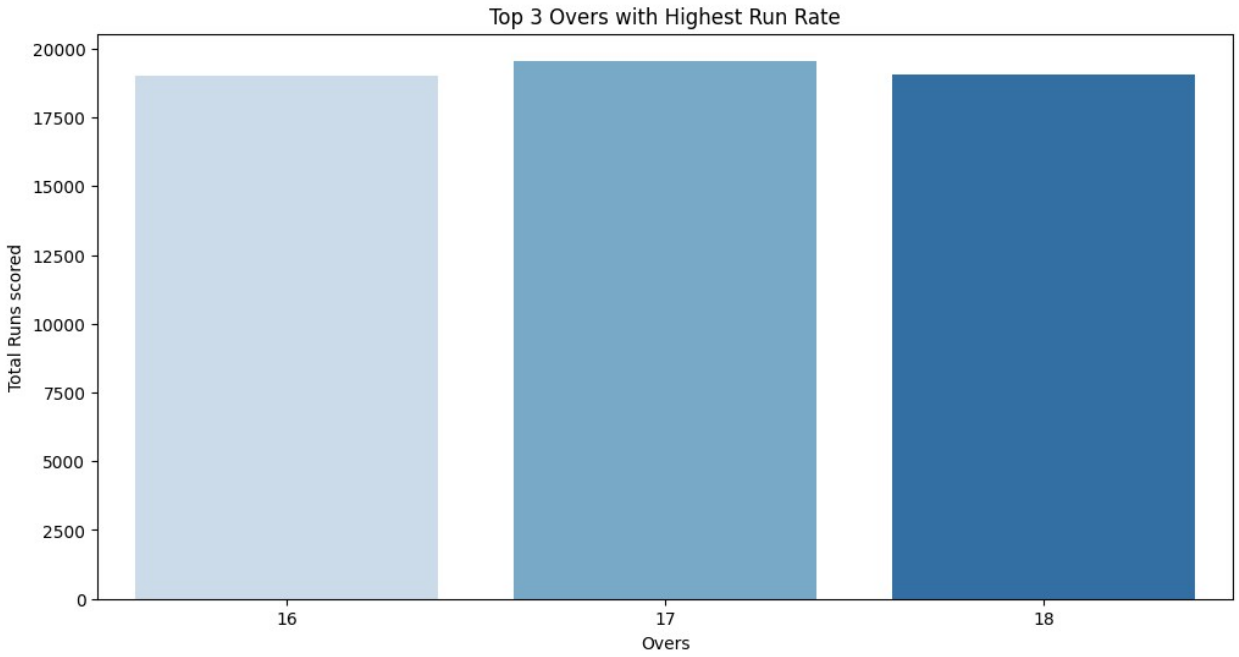



```
# 7. Tabulate and visualize the most common dismissal type.
dismissal_types = df["dismissal_kind"].value_counts()
plt.figure(figsize=(12, 6))
plt.bar(dismissal_types.index, dismissal_types.values, color="green",
edgecolor="black")
plt.xticks(rotation=90)
plt.xlabel("Dismissal Type")
plt.ylabel("Count")
plt.title("Most Common Dismissal Type")
plt.show()
```

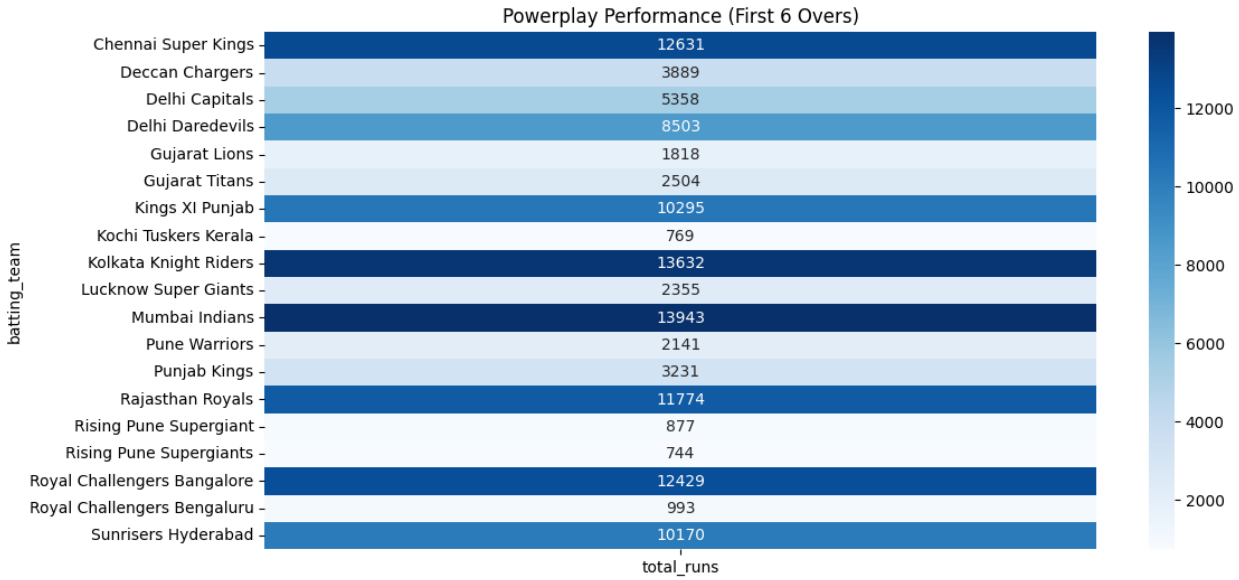



```
# 8. Find and display which of the top 3 overs has the highest run
rate.
over_runrate = df.groupby("over")["total_runs"].sum().nlargest(3)
plt.figure(figsize=(12, 6))
sns.barplot(x=over_runrate.index, y=over_runrate.values,
palette="Blues")
plt.xlabel("Overs")
plt.ylabel("Total Runs scored")
plt.title("Top 3 Overs with Highest Run Rate")
plt.show()
```

```
C:\Users\THARUN\AppData\Local\Temp\ipykernel_27308\4247479078.py:4:
FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be
removed in v0.14.0. Assign the `x` variable to `hue` and set
`legend=False` for the same effect.

  sns.barplot(x=over_runrate.index, y=over_runrate.values,
palette="Blues")
```



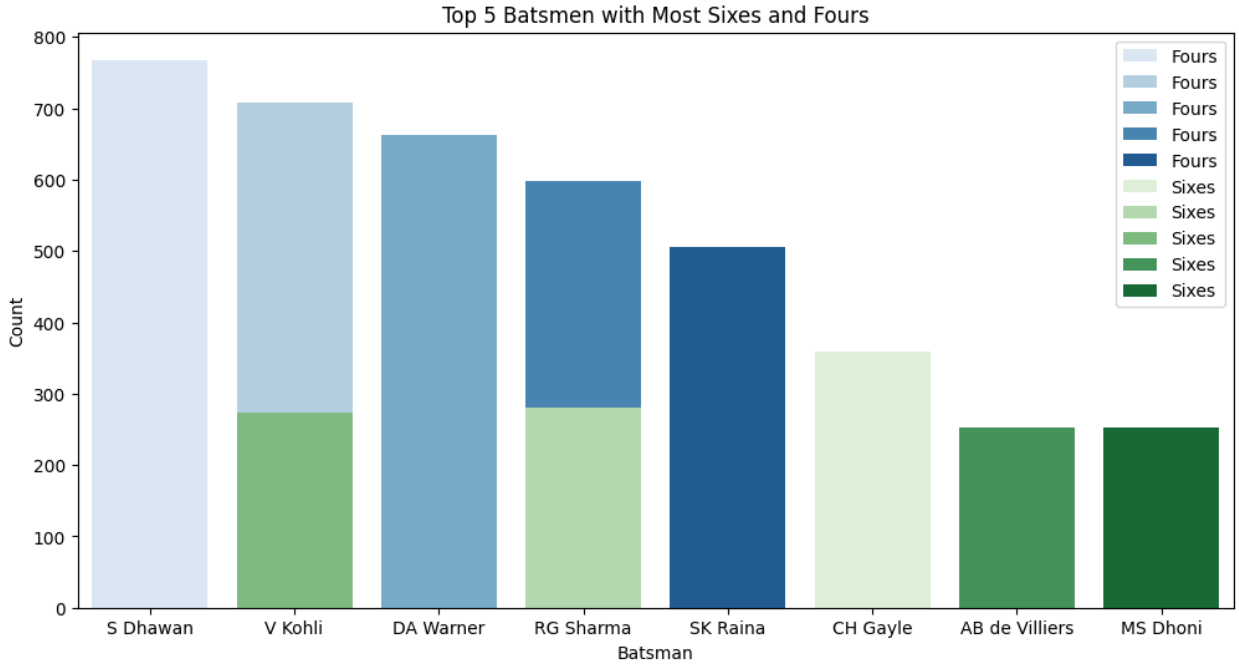

```
# 9. Analyze and visualize powerplay performance (first 6 overs).
powerplay = df[df["over"] <= 6].groupby("batting_team")
["total_runs"].sum()
plt.figure(figsize=(12, 6))
sns.heatmap(powerplay.to_frame(), annot=True, cmap="Blues", fmt="d")
plt.title("Powerplay Performance (First 6 Overs)")
plt.show()
```




```
# 10. Tabulate and visualize the top 5 batsmen with the most sixes and
fours.
```

```
fours = df[df["batsman_runs"] == 4].groupby("batter")
["batsman_runs"].count().nlargest(5)
sixes = df[df["batsman_runs"] == 6].groupby("batter")
["batsman_runs"].count().nlargest(5)
plt.figure(figsize=(12, 6))
sns.barplot(x=fours.index, y=fours.values, palette="Blues",
label="Fours")
sns.barplot(x=sixes.index, y=sixes.values, palette="Greens",
label="Sixes")
plt.xlabel("Batsman")
plt.ylabel("Count")
plt.title("Top 5 Batsmen with Most Sixes and Fours")
plt.legend()
plt.show()
```

```
C:\Users\THARUN\AppData\Local\Temp\ipykernel_27308\4028356926.py:5:
FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be
removed in v0.14.0. Assign the `x` variable to `hue` and set
`legend=False` for the same effect.

  sns.barplot(x=fours.index, y=fours.values, palette="Blues",
label="Fours")
C:\Users\THARUN\AppData\Local\Temp\ipykernel_27308\4028356926.py:6:
FutureWarning:

Passing `palette` without assigning `hue` is deprecated and will be
removed in v0.14.0. Assign the `x` variable to `hue` and set
`legend=False` for the same effect.

  sns.barplot(x=sixes.index, y=sixes.values, palette="Greens",
label="Sixes")
```


Top 5 Batsmen with Most Sixes and Fours
Count
Batsman
0
100
200
300
400
500
600
700
800
S Dhawan
V Kohli
DA Warner
RG Sharma
SK Raina
CH Gayle
AB de Villiers
MS Dhoni
Fours
Fours
Fours
Fours
Fours
Sixes
Sixes
Sixes
Sixes
Sixes