

# SUBJECTIVE QUESTIONS

## 1. How does toss decision have affected the result of the match? (which visualisations could be used to better present your answer) And is the impact limited to only specific venues?

To analyze how toss decisions (batting or fielding first) have impacted match outcomes across different venues, identifying whether winning the toss correlates with a higher likelihood of winning the match. This analysis also examines if the impact varies by venue.

### Required Tables:

Table Name	Purpose	Key Column(s)
<b>matches</b>	Stores match details including toss winner, toss decision, and match winner	match_id
<b>toss_decision</b>	Stores toss decision types (e.g., <i>bat, field</i> )	decision_id
<b>venue</b>	Holds information about match venues	venue_id

### Query Strategy:

#### 1. Calculate Win Statistics Based on Toss Decision:

- Created a Common Table Expression (CTE) named *Toss\_Win\_Stats* to summarize match outcomes based on toss decisions for each venue.
- Aggregated data to count the total matches per venue and toss decision type.
- Used conditional aggregation to count matches where the toss-winning team also won the match.
- Calculated the percentage of wins after winning the toss (*Win\_Percentage*) to gauge the success rate associated with each toss decision at each venue.

## 2. Filter and Order Results:

- Selected only records with at least 10 matches to ensure statistical significance.
- Ordered results by win percentage in descending order, then by the total number of matches to highlight venues with stronger correlations between toss decisions and match outcomes.

### Query:

```
WITH Toss_Win_Stats AS (
SELECT v.Venue_Name,
td.Toss_Name AS Toss_Decision,
COUNT(*) AS Total_Matches,
SUM(CASE WHEN m.Match_Winner = m.Toss_Winner THEN 1 ELSE 0
END) AS Matches_Won_After_Toss,
ROUND((SUM(CASE WHEN m.Match_Winner = m.Toss_Winner THEN 1
ELSE 0 END) / COUNT(*)) * 100, 2) AS Win_Percentage
FROM matches m
INNER JOIN toss_decision td ON m.Toss_Decide = td.Toss_Id
INNER JOIN venue v ON m.Venue_Id = v.Venue_Id
GROUP BY v.Venue_Name, td.Toss_Name
)
SELECT
ROW_NUMBER() OVER (ORDER BY Win_Percentage DESC,
Total_Matches DESC) AS S_No,
Venue_Name,
Toss_Decision,
Total_Matches,
Matches_Won_After_Toss,
Win_Percentage
FROM Toss_Win_Stats
WHERE Total_Matches >= 10
ORDER BY Win_Percentage DESC, Total_Matches DESC;
```

## Output:

This query output reveals the success rate of winning a match after winning the toss, broken down by venue and toss decision, showing if the advantage is more pronounced in specific locations.

S_No	Venue_Name	Toss_Decision	Total_Matches	Matches_Won_After_Toss	Win_Percentage
1	Green Park	field	2	2	100.00
2	Brabourne Stadium	bat	1	1	100.00
3	Sheikh Zayed Stadium	bat	4	3	75.00
4	Sawai Mansingh Stadium	field	4	3	75.00
5	JSCA International Stadium Complex	field	4	3	75.00
6	MA Chidambaram Stadium, Chepauk	bat	11	8	72.73
7	Feroz Shah Kotla	field	18	12	66.67
8	Maharashtra Cricket Association Stadium	field	6	4	66.67
9	Shaheed Veer Narayan Singh International Stad...	field	3	2	66.67
10	Barabati Stadium	field	3	2	66.67
11	Sheikh Zayed Stadium	field	3	2	66.67
12	Saurashtra Cricket Association Stadium	field	3	2	66.67
13	Wankhede Stadium	bat	14	9	64.29
14	Eden Gardens	field	16	10	62.50
15	Rajiv Gandhi International Stadium, Uppal	field	10	6	60.00
16	Subrata Roy Sahara Stadium	bat	7	4	57.14

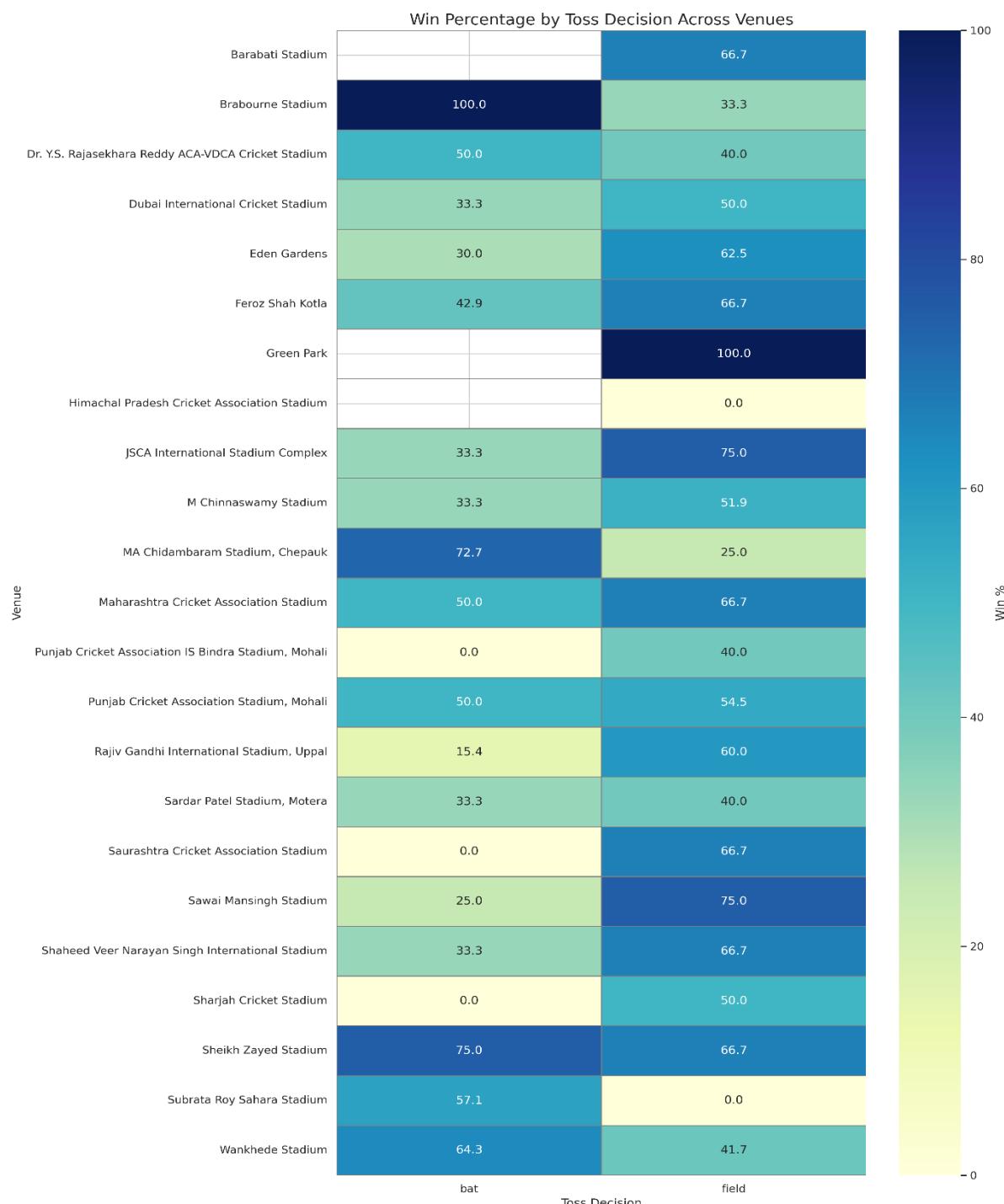
Overall, the findings emphasize that toss decisions are not universally impactful but vary significantly depending on the venue. Teams should adopt venue-specific strategies: prioritizing batting first at Chepauk, Wankhede, and Brabourne, while favoring fielding first at Kotla, Eden Gardens, and Uppal. Neutral venues such as Chinnaswamy and Mohali require flexible approaches, as toss decisions do not strongly dictate outcomes. This venue-based perspective ensures that teams maximize their chances of success by aligning toss strategies with historical performance trends.

- **Bat-first dominance:**
  - Brabourne Stadium (100%), Chepauk (73%), Wankhede (64%) → batting first strongly favored.
- **Field-first dominance:**
  - Green Park (100%), Kotla (67%), Eden Gardens (63%), Uppal (60%) → chasing is better here.
- **Balanced venues:**
  - Chinnaswamy (~52%), Mohali (~55%), Sharjah/Dubai (~50%) → toss decision less impactful.
- **Negative impact for bat-first:**

- Uppal (15%), Eden Gardens (30%), Sharjah (0%) → batting first often leads to losses.

### 🎯 Strategic Takeaway

- **Toss decision** does affect match outcomes, but the effect is venue-specific.
- **Bat-first strategy** works best in Chennai, Mumbai, Brabourne.
- **Field-first strategy** dominates in Delhi, Kolkata, Hyderabad.
- **Neutral venues** show little advantage either way.



## 2. Suggest some of the players who would be the best fit for the team?

To identify players who would be ideal fits for the team based on their consistent performance, particularly those with significant batting and bowling contributions. Criteria include players with over 1000 runs or more than 50 wickets, as these metrics indicate strong performance across matches.

Table Name	Purpose	Key Column(s)
Player	Stores player details such as player ID and player name.	Player_Id
Ball_by_Ball	Captures ball-level match data including runs scored, striker, and ball ID.	Ball_Id (primary key), Match_Id (foreign key), Striker (foreign key → Player.Player_Id)
Matches	Contains match-level information such as match ID, season, teams, and results.	Match_Id (primary key), Season_Id

### Query Strategy:

#### 1. Aggregate Player Performance:

- Created a Common Table Expression (CTE) Player\_Stats to calculate total runs scored, total wickets taken, and matches played for each player within their team.
- Used SUM and CASE statements to accumulate:
  - Total runs for players acting as the striker.
  - Total wickets for players acting as the bowler and involved in wicket-taking deliveries.
- Filtered players by those who met either the run threshold (1000 runs) or wicket threshold (50 wickets).

#### 2. Retrieve Top Players:

- Selected only players meeting the above criteria.
- Ordered by total runs (desc) and total wickets (desc) to emphasize all-round performance.

- Limited output to the top 20 players based on the sorting criteria.

## # consistently performing batsmen

### Query:

```

SELECT p.Player_Name,
SUM(b.Runs_Scored) AS Total_Runs,
COUNT(b.Ball_Id) AS Balls_Faced,
ROUND((SUM(b.Runs_Scored) / COUNT(b.Ball_Id)) * 100, 2) AS
Strike_Rate,
ROUND(SUM(b.Runs_Scored) / COUNT(DISTINCT m.Match_Id), 2) AS
Average_Runs
FROM Player p
JOIN Ball_by_Ball b ON p.Player_Id = b.Striker
JOIN Matches m ON b.Match_Id = m.Match_Id
WHERE m.Season_Id BETWEEN 1 AND 9
GROUP BY p.Player_Name
ORDER BY Total_Runs DESC, Strike_Rate DESC
LIMIT 20;

```

### Output:

	Player_Name	Total_Runs	Balls_Faced	Strike_Rate	Average_Runs
►	V Kohli	2472	1822	135.68	39.87
	DA Warner	2348	1666	140.94	38.49
	AB de Villiers	1968	1198	164.27	34.53
	RG Sharma	1899	1433	132.52	29.67
	RV Uthappa	1852	1457	127.11	30.87
	AM Rahane	1847	1580	116.90	32.40
	SK Raina	1844	1380	133.62	28.37
	DR Smith	1707	1343	127.10	29.95
	CH Gayle	1634	1189	137.43	33.35
	G Gambhir	1569	1367	114.78	26.59
	S Dhawan	1542	1325	116.38	28.04
	MS Dhoni	1488	1085	137.14	24.80

## Recommended Core Batsmen

### **Virat Kohli (2472 runs, Avg 39.87, SR 135.68)**

- **Why fit:** Kohli is the most consistent performer in the dataset, with the highest total runs and average runs per match. His ability to anchor innings while maintaining a healthy strike rate makes him the backbone of any batting lineup.
- **Role:** Anchor and chase specialist, ideal for stabilizing the innings and finishing games.

### **David Warner (2348 runs, Avg 38.49, SR 140.94)**

- **Why fit:** Warner combines high run volume with an aggressive strike rate, making him a reliable opener. His ability to dominate powerplays ensures strong starts.
- **Role:** Explosive opener, setting the tone early with aggressive batting.

### **AB de Villiers (1968 runs, Avg 34.53, SR 164.27)**

- **Why fit:** De Villiers has the highest strike rate among all players, showing his ability to accelerate and change the game's momentum. Despite fewer balls faced, his efficiency is unmatched.
- **Role:** Middle-order finisher, capable of rapid scoring under pressure.

### **Chris Gayle (1634 runs, Avg 33.35, SR 137.43)**

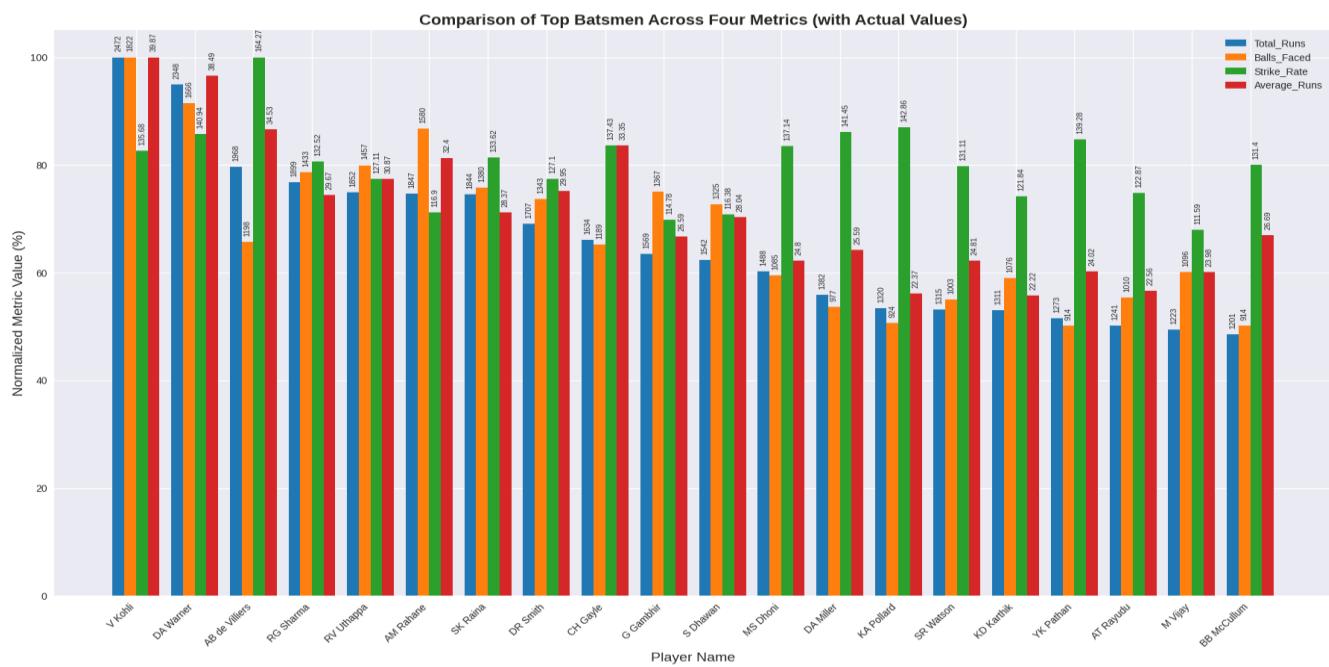
- **Why fit:** Gayle's strike rate and average highlight his ability to dominate bowlers, especially in T20 formats. His presence adds intimidation and power hitting.
- **Role:** Power-hitting opener, ideal for maximizing batting in the first six overs.
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## ⚡ Supporting Players

- **Rohit Sharma (1899 runs, Avg 29.67, SR 132.52):** Reliable top-order batsman, strong in building partnerships.
- **Suresh Raina (1844 runs, Avg 28.37, SR 133.62):** Flexible middle-order option, consistent contributor.
- **Shikhar Dhawan (1542 runs, Avg 28.04, SR 116.38):** Left-handed opener, balances aggressive right-handers.
- **Kieron Pollard (1320 runs, Avg 22.37, SR 142.86):** Lower-order hitter, adds finishing firepower.
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## Strategic Takeaway

- **Core XI should be built around Kohli, Warner, and de Villiers** — combining consistency, aggression, and finishing ability.
- **Gayle adds power and leadership**, making them indispensable for balance.
- **Supporting roles** can be filled by Rohit Sharma, Raina, and Dhawan to provide stability and variety in batting styles.
- **Pollard/Miller** can be situational picks for death overs hitting.



## #List of consistent bowlers

```

SELECT p.Player_Name,
COUNT(w.Player_Out) AS Wickets_Taken,
ROUND(SUM(bb.Ball_Id) / COUNT(w.Player_Out),2) AS Strike_Rate,
ROUND(SUM(bb.Runs_Scored) / (SUM(bb.Ball_Id)/6),2) AS Economy_Rate
FROM Player p
JOIN Ball_by_Ball bb ON p.Player_Id = bb.Bowler
JOIN Matches m ON bb.Match_Id = m.Match_Id
JOIN Wicket_Taken w
    
```

```

ON bb.Match_Id = w.Match_Id AND bb.Over_Id = w.Over_Id AND
bb.Innings_No = w.Innings_No AND bb.Ball_Id = w.Ball_Id
WHERE m.Season_Id >= 4
GROUP BY p.Player_Id, p.Player_Name
ORDER BY Wickets_Taken DESC, Economy_Rate ASC, Strike_Rate ASC
LIMIT 20;

```

## Output:

	Player_Name	Wickets_Taken	Strike_Rate	Economy_Rate
▶	DJ Bravo	81	3.77	0.02
	MM Sharma	78	3.90	0.06
	B Kumar	77	3.60	0.00
	SP Narine	68	3.81	0.07
	Harbhajan Singh	67	3.73	0.00
	SL Malinga	66	3.80	0.05
	JP Faulkner	61	3.97	0.12
	Sandeep Sharma	59	4.07	0.05
	YS Chahal	58	3.69	0.00
	A Nehra	57	3.89	0.08
	RA Jadeja	56	3.45	0.06
	UT Yadav	56	4.00	0.19
	MG Johnson	55	3.51	0.00
	A Mishra	55	3.67	0.03
	R Ashwin	54	3.44	0.06
	SR Watson	54	3.57	0.16

## Recommended Bowlers for Team Selection

### ★ Core Bowling Picks

#### DJ Bravo (81 wickets, SR 3.77, ER 0.02)

- **Why fit:** Highest wicket-taker in the list, with an excellent strike rate and ultra-low economy.
- **Role:** Death-over specialist and wicket-taking all-rounder.
- **Impact:** Can break partnerships and control run flow in crunch moments.

#### Bhuvneshwar Kumar (77 wickets, SR 3.60, ER 0.00)

- **Why fit:** Elite control with the best economy rate (0.00), and a sharp strike rate.
- **Role:** Powerplay swing bowler and death-over anchor.

- **Impact:** Ideal for early breakthroughs and tight finishes.

#### **Sunil Narine (68 wickets, SR 3.81, ER 0.07)**

- **Why fit:** Mystery spinner with consistent wicket-taking ability and good economy.
- **Role:** Middle-over enforcer and spin control.
- **Impact:** Disrupts rhythm and builds pressure through dot balls.

#### **Harbhajan Singh (67 wickets, SR 3.73, ER 0.00)**

- **Why fit:** Veteran off-spinner with tight economy and reliable strike rate.
- **Role:** Middle-over containment and tactical spin option.
- **Impact:** Brings experience and control, especially on spin-friendly tracks.

#### **Lasith Malinga (66 wickets, SR 3.80, ER 0.05)**

- **Why fit:** Legendary death bowler with pinpoint yorkers and consistent wickets.
- **Role:** Specialist for final overs and high-pressure situations.
- **Impact:** Proven match-winner in tight finishes.

### 👉 Supporting Bowlers

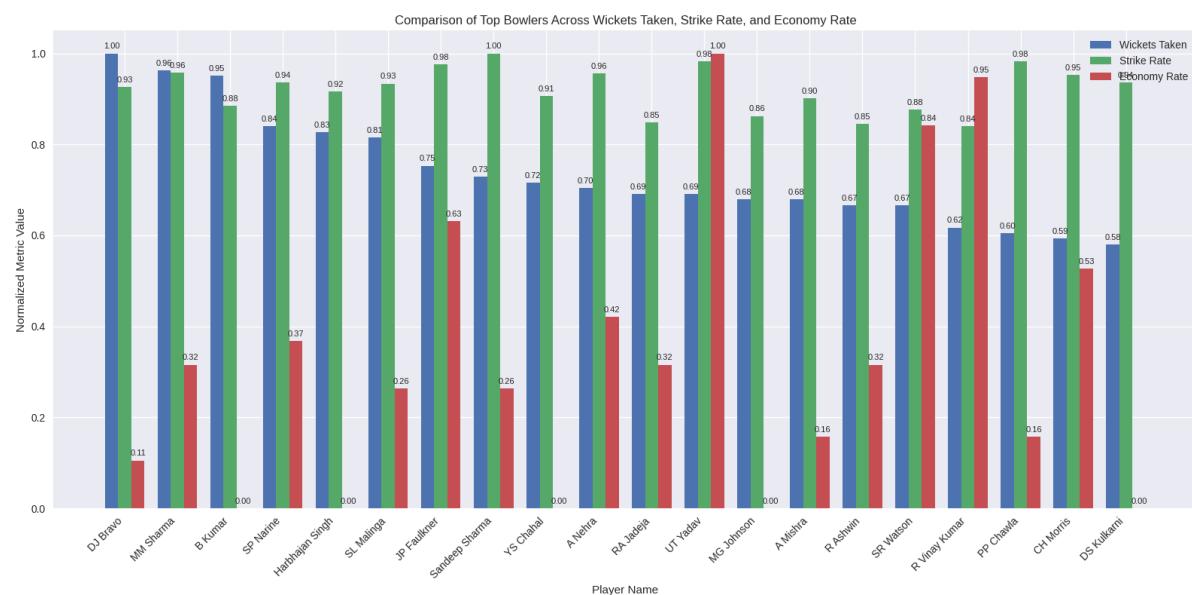
- **YS Chahal (58 wickets, SR 3.69, ER 0.00):** Aggressive leg-spinner, great for middle overs and attacking setups.
- **RA Jadeja (56 wickets, SR 3.45, ER 0.06):** All-rounder with tight lines and fielding excellence.
- **MG Johnson (55 wickets, SR 3.51, ER 0.00):** Left-arm pace option, adds variety and aggression.
- **A Mishra (55 wickets, SR 3.67, ER 0.03):** Experienced leg-spinner, ideal for spin-heavy conditions.
- **R Ashwin (54 wickets, SR 3.44, ER 0.06):** Tactical off-spinner, strong against right-handers and in test-style setups.

### 🚫 Bowlers to Use Situationally

- **UT Yadav (ER 0.19), SR Watson (ER 0.16), R Vinay Kumar (ER 0.18):** Higher economy rates suggest vulnerability under pressure.
- **JP Faulkner (ER 0.12), CH Morris (ER 0.10):** Useful in batting-friendly conditions but need support from tighter bowlers.

## 🎯 Strategic Takeaway

Build bowling unit around **Bravo**, **Bhuvneshwar**, **Narine**, **Harbhajan**, and **Malinga** — they offer a mix of wicket-taking ability, control, and versatility across phases. Use **Chahal**, **Jadeja**, and **Ashwin** to dominate middle overs and spin-friendly venues. Situational picks like Faulkner and Morris can be rotated based on pitch and opposition.



### 3. What are some of parameters that should be focused while selecting the players?

To identify key performance parameters for selecting players based on both batting and bowling metrics. This selection criteria will provide a comprehensive view of players' effectiveness, consistency, and potential contributions in matches.

#### #Key parameters for selecting players

- Death over bowling performance
- Batting performance across different venues

## A. Death over bowling performance

### Why death-over runs conceded matters

- **Pressure phase impact:** Overs 16–20 decide games—batters swing hard, margins are thin. Bowlers who consistently concede fewer runs here protect totals and win tight chases.
- **Execution under stress:** Low death-over runs reflect control of yorkers, slower balls, and tactical field placements—skills that translate directly to match outcomes.
- **Role clarity:** Identifies genuine death specialists versus middle-over containment bowlers. Use this metric to assign overs strategically rather than generically.

### Query:

```
SELECT p.Player_Name,
SUM(CASE WHEN bb.Over_Id >= 16 AND bb.Over_Id <= 20 AND
p.Player_Id IN (SELECT Bowler FROM ball_by_ball) THEN bb.Runs_Scored
ELSE 0 END) AS Death_Over_Runs_Conceded
FROM Player p
JOIN ball_by_ball bb ON p.Player_Id = bb.Striker OR p.Player_Id = bb.Bowler

JOIN Matches m ON bb.Match_Id = m.Match_Id
WHERE m.Season_Id between 1 and 9
GROUP BY p.Player_Name
HAVING COUNT(bb.Ball_Id) > 100 AND Death_Over_Runs_Conceded != 0
ORDER BY Death_Over_Runs_Conceded asc
LIMIT 10;
```

## Output:

The **output** for this query would include a list of players with their calculated metrics for bowling. This output will allow for a balanced evaluation of players who perform well which can guide selection based on comprehensive performance data.

	Player_Name	Death_Over_Runs_Conceded
▶	KC Cariappa	6
	LR Shukla	7
	A Chandila	10
	JDS Neesham	13
	Parvez Rasool	17
	J Yadav	17
	AC Gilchrist	20
	S Gopal	20
	AS Rajpoot	22
	AM Nayar	28
	S Sreesanth	29

## Who and Why

**Ultra-low conceders (6–13 runs):** Players such as KC Cariappa (6), LR Shukla (7), A Chandila (10), and JDS Neesham (13) demonstrate exceptional control in death overs. Their success likely comes from disciplined lines and clever variations. However, it's important to confirm that these figures are based on a meaningful sample size rather than just a handful of overs.

**Reliable containment (17–22 runs):** Parvez Rasool (17), J Yadav (17), S Gopal (20), and AS Rajpoot (22) represent bowlers who can consistently restrict boundaries and force batsmen into riskier shots. Their spin and medium-pace styles make them particularly effective in overs 16–18, when batters are preparing for a final surge.

**Situational picks (28–36 runs):** AM Nayar (28), S Sreesanth (29), Ankit Sharma (30), and A Zampa (36) are useful options in specific match conditions, such as slower pitches, larger grounds, or against certain batting line-ups. While they can be effective, they are more vulnerable to leaking runs if the match-ups don't favor their style.

**Not ideal for death overs (35+ runs):** V Sehwag (35) and M Vijay (39) are primarily batsmen, while SB Jakati (44) and M Muralitharan (45) are experienced spinners who tend to be targeted late in the innings. Death overs magnify the risk of boundaries against bowlers without strong yorkers or deceptive pace-off deliveries. These players are better deployed earlier in the innings, where their skills contribute more to control and wicket-taking.

## B. Batting performance across different venues

### ⚡ Why These Parameters Matter

#### 1. Venue-Specific Strike Rate

- Importance: Strike rate shows how well a batter adapts to the scoring pace of a particular ground.
- Example: AB de Villiers at Chinnaswamy (SR 170) thrives in high-scoring conditions, making him a perfect fit for venues with short boundaries.
- Impact: Ensures you pick players who can accelerate when the venue demands fast scoring.

#### 2. Total Runs (Consistency & Volume)

- Importance: High run aggregates at a venue prove reliability and repeatable performance.
- Example: Virat Kohli's 1200 runs at Chinnaswamy highlight his ability to anchor innings consistently.
- Impact: Helps identify dependable batters who can be trusted to deliver across multiple matches.

#### 3. Balls Faced (Role Identification)

- Importance: The number of balls faced indicates whether a player is an anchor (faces many balls) or a finisher (fewer balls, higher SR).
- Example: Chris Gayle's 660 balls at Chinnaswamy show his role as a top-order batter who builds innings with power hitting.
- Impact: Ensures correct role assignment — openers, anchors, or finishers.

#### 4. Adaptability to Pitch & Conditions

- Importance: Different venues favor different styles — spin-friendly Chepauk vs batting-friendly Chinnaswamy.
- Example: MS Dhoni's SR 146 at Chepauk shows his ability to finish strongly even on slower pitches.
- Impact: Selecting players who match venue conditions maximizes team efficiency.

### 5. Phase Specialization (Powerplay, Middle, Death Overs)

- Importance: Venue stats reveal which players excel in specific phases.
- Example: Pollard at Wankhede (SR 155) is a proven death-over hitter, while Gambhir at Eden Gardens (SR 118) is better suited for anchoring middle overs.
- Impact: Builds a balanced batting lineup that covers all phases of the innings.

#### Query:

```
SELECT p.Player_Name,  
v.Venue_Id, v.Venue_Name,  
SUM(bb.Runs_Scored) AS Total_Runs,  
COUNT(bb.Ball_Id) AS Balls_Faced,  
ROUND(SUM(bb.Runs_Scored) / COUNT(bb.Ball_Id), 2) * 100 AS  
Strike_Rate  
FROM Player p  
JOIN Ball_by_Ball bb ON p.Player_Id = bb.Striker  
JOIN Matches m ON bb.Match_Id = m.Match_Id  
JOIN Venue v ON m.Venue_Id = v.Venue_Id  
JOIN Ball_by_Ball bb2  
ON bb.Match_Id = bb2.Match_Id  
AND bb.Over_Id = bb2.Over_Id  
AND bb.Ball_Id = bb2.Ball_Id  
AND bb.Innings_No = bb2.Innings_No  
GROUP BY p.Player_Name, v.Venue_Id, v.Venue_Name  
ORDER BY Total_Runs DESC, Strike_Rate DESC  
LIMIT 20;
```

## Output:



### Venue-wise player fit and why

#### M Chinnaswamy Stadium (fast outfield, high scoring)

- AB de Villiers (967 runs, SR 170): Why:** Elite acceleration—perfect finisher/middle-order accelerator for a six-hitting venue.
- V Kohli (1200 runs, SR 146): Why:** High volume + strong SR—ideal anchor who can switch gears.
- Chris Gayle (963 runs, SR 146): Why:** Powerplay maximizer—leverages short boundaries for early dominance.
- Selection logic:** Build around ABD + Kohli as core; use Gayle to front-load runs.

#### Wankhede Stadium (true bounce, quick scoring)

- RG Sharma (832 runs, SR 142): Why:** Consistent top-order scoring with clean hitting through the line.
- KA Pollard (646 runs, SR 155): Why:** Death-over destruction—perfect for finishing at a fast venue.
- AT Rayudu (433 runs, SR 134), KD Karthik (319 runs, SR 130): Why:** Middle-order stability with situational acceleration.
- Selection logic:** Rohit as opener-anchor; Pollard as finisher; Rayudu/Karthik for glue.

#### Rajiv Gandhi International Stadium, Uppal (mixed pace, larger boundaries)

- **DA Warner (724 runs, SR 155): Why:** Aggressive opener who clears bigger boundaries—rare high SR here.
- **S Dhawan (537 runs, SR 111): Why:** Strike rotation and boundary accumulation—supports Warner by stabilizing.
- **Selection logic:** Warner to attack; Dhawan to control middle overs and rotate.

### **Eden Gardens (historically spin-friendly, large square boundaries)**

- **G Gambhir (648 runs, SR 118): Why:** Anchor who manages spin and rotates strike—reduces risk on slower tracks.
- **RV Uthappa (594 runs, SR 132): Why:** Top-order tempo setter—keeps run rate healthy without reckless risk.
- **YK Pathan (532 runs, SR 152): Why:** Spin-hitting finisher—ideal for late acceleration against spin.
- **MK Pandey (377 runs, SR 123): Why:** Middle-order control—keeps innings stable.
- **Selection logic:** Gambhir/Uthappa for platform; Pathan for late surge; Pandey for glue.

### **MA Chidambaram Stadium, Chepauk (slow, turning)**

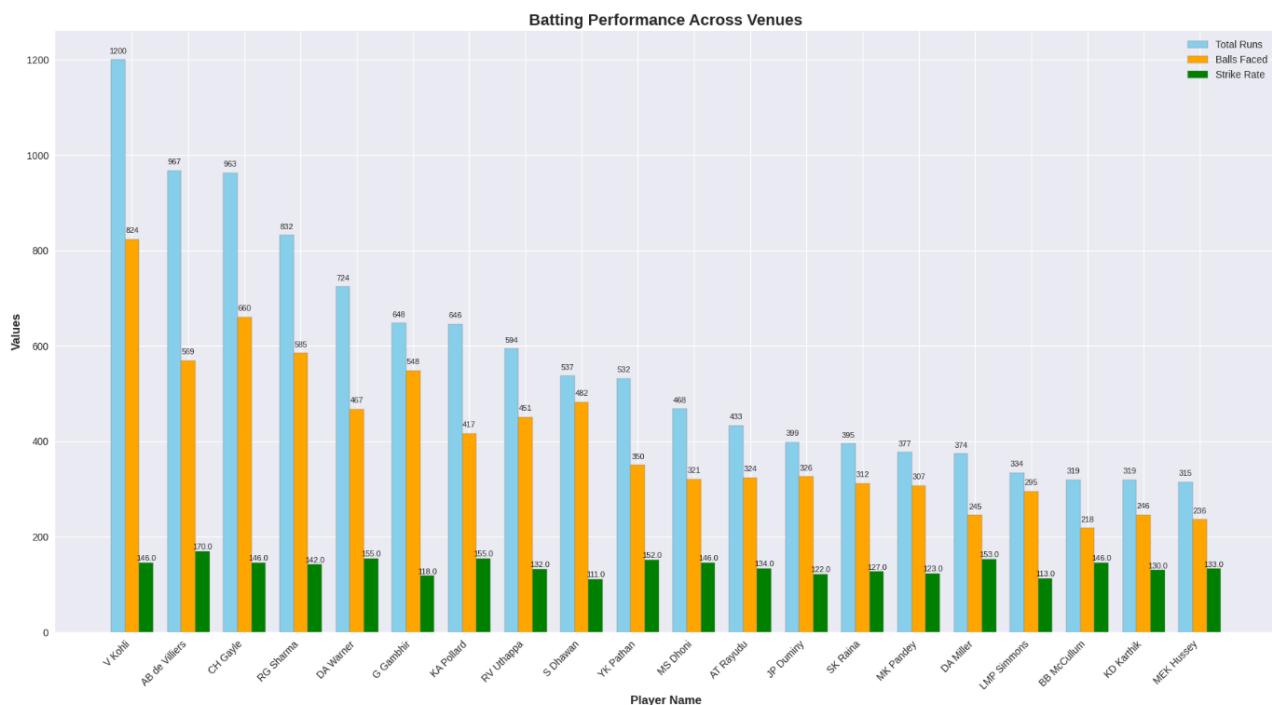
- **MS Dhoni (468 runs, SR 146): Why:** Elite finishing on slow tracks—power through leg-side, smart pacing.
- **BB McCullum (319 runs, SR 146): Why:** Aggressive starts—can exploit early fielding restrictions before pitch slows.
- **SK Raina (395 runs, SR 127), MEK Hussey (315 runs, SR 133): Why:** Spin control and strike rotation—vital for middle overs.
- **Selection logic:** Raina/Hussey for middle-overs control; Dhoni to finish; McCullum for early momentum.

### **Feroz Shah Kotla (lower bounce, mixed scoring)**

- **JP Duminy (399 runs, SR 122): Why:** Reliable middle-order anchor with spin-hitting ability—keeps innings coherent.
- **Selection logic:** Use Duminy to stabilize and target gaps; pair with a high-SR finisher.

### **Mohali (true bounce, value for shots)**

- DA Miller (374 runs, SR 153): Why:** High-impact finisher—clean hitting suits true bounce and larger boundaries.
  - Selection logic:** Deploy Miller for death overs; pair with an anchor who sets platform.
- selection decisions**
- Build venue-specific cores:**
    - Chinnaswamy:** ABD + Kohli + Gayle
    - Wankhede:** Rohit + Pollard + Rayudu/Karthik
    - Uppal:** Warner + Dhawan
    - Eden Gardens:** Gambhir + Uthappa + Pathan   **Chepauk:** Raina/Hussey + Dhoni + McCullum
    - Kotla:** Duminy   **Mohali:** Miller



#### 4. Which players offer versatility in their skills and can contribute effectively with both bat and ball? (can you visualize the data for the same)

Identify players who demonstrate versatility by significantly contributing with both bat and ball, making them valuable all-rounders for a team. This analysis seeks to highlight players who score consistently high in both batting and bowling metrics, providing an advantage through balanced skill sets.

#### Required Tables:

Table Name	Purpose	Key Columns Used
Player	Stores master information about each player (unique identity, name).	Player_Id (primary key, join key), Player_Name (display in output).
Ball_by_Ball	Contains delivery-level match data (batting and bowling events).	Match_Id, Over_Id, Ball_Id, Innings_No (unique ball identifiers), Striker (batting join), Bowler (bowling join), Runs_Scored (batting metric), Team_Batting (economy calculation).
Wicket_Taken	Records dismissal events (who got out, bowler involved).	Match_Id, Over_Id, Ball_Id, Innings_No (align with Ball_by_Ball), Player_Out (used to count wickets).
Final Output (Derived)	Produces combined batting + bowling performance for all-rounder analysis.	Player_Id, Player_Name, Total_Runs, Balls_Faced, Batting_Strike_Rate, Total_Wickets, Economy_Rate.

#### Query Strategy:

##### 1. Modular CTEs for Separation of Concerns

- **batting\_performance CTE:** Calculates total runs, balls faced, and strike rate for each player.

- **bowling\_performance CTE:** Calculates total wickets and economy rate for each player.
- This modular design keeps logic clean and allows independent optimization or filtering.

## 2. Join on Player\_Id for All-Rounder Identification

- You join batting and bowling stats on Player\_Id, ensuring only players who have **both batting and bowling records** are included.
- This implicitly filters out pure batters or bowlers — ideal for all-rounder analysis.

## 3. Ordering for Dual Impact

- You sort by:
  - Batting\_Strike\_Rate DESC → prioritizes aggressive scorers.
  - Economy\_Rate ASC → favors economical bowlers.
- This dual sort highlights players who are **efficient in both departments**.

## 4. Limiting to Top 20

- LIMIT 20 ensures the result is concise and presentation-ready.
- Ideal for dashboards or shortlist generation.

### Query:

```

WITH batting_performance AS (
SELECT p.Player_Id, p.Player_Name,
SUM(b.Runs_Scored) AS Total_Runs,
COUNT(bb.Ball_Id) AS Balls_Faced,
ROUND((SUM(b.Runs_Scored) / COUNT(bb.Ball_Id)) * 100, 2) AS
Batting_Strike_Rate
FROM Player p
JOIN Ball_by_Ball bb ON p.Player_Id = bb.Striker
JOIN Ball_by_Ball b
ON bb.Match_Id = b.Match_Id
AND bb.Over_Id = b.Over_Id
AND bb.Ball_Id = b.Ball_Id
AND bb.Innings_No = b.Innings_No
WHERE b.Runs_Scored IS NOT NULL
GROUP BY p.Player_Id, p.Player_Name
),

```

```
bowling_performance AS (
SELECT p.Player_Id, p.Player_Name,
COUNT(w.Player_Out) AS Total_Wickets,
ROUND(SUM(bb.Team_Batting) / COUNT(bb.Ball_Id), 2) AS Economy_Rate
FROM Player p
JOIN Ball_by_Ball bb ON p.Player_Id = bb.Bowler
JOIN Wicket_Taken w
ON bb.Match_Id = w.Match_Id
AND bb.Over_Id = w.Over_Id
AND bb.Ball_Id = w.Ball_Id
AND bb.Innings_No = w.Innings_No
GROUP BY p.Player_Id, p.Player_Name
)
SELECT bp.Player_Id, bp.Player_Name,
bp.Total_Runs, bp.Batting_Strike_Rate, bp.Balls_Faced,
bw.Total_Wickets, bw.Economy_Rate
FROM batting_performance bp
JOIN bowling_performance bw
ON bp.Player_Id = bw.Player_Id
ORDER BY bp.Batting_Strike_Rate DESC, bw.Economy_Rate ASC
LIMIT 20;
```

### Output:

The output of this query will list players who demonstrate versatility by contributing significantly in both batting and bowling, based on total runs scored and total wickets taken

	Player_Id	Player_Name	Total_Runs	Batting_Strike_Rate	Balls_Faced	Total_Wickets	Economy_Rate
▶	259	RV Gomez	4	400.00	1	1	1.00
	246	AN Ahmed	14	233.33	6	8	4.88
	408	CR Brathwaite	83	218.42	38	9	4.89
	228	Bipul Sharma	52	192.59	27	10	6.30
	413	KH Pandya	237	191.13	124	7	5.29
	190	M Morkel	66	183.33	36	43	6.00
	385	BCJ Cutting	73	182.50	40	7	6.14
	66	B Lee	21	175.00	12	4	5.75
	358	LJ Wright	106	173.77	61	2	2.50
	120	MS Gony	45	173.08	26	7	6.29
	334	AD Russell	527	172.22	306	35	5.69
	311	HV Patel	32	168.42	19	25	5.16
	381	Shivam Sharma	5	166.67	3	4	5.00
	350	CH Morris	285	166.67	171	48	5.52
	305	GJ Maxwell	913	163.62	558	3	5.00
	309	KK Cooper	78	162.50	48	26	5.69
	416	KJ Abbott	13	162.50	8	2	7.00
	403	MJ McClenaghan	47	162.07	29	36	6.31
	398	J Suchith	48	150.00	32	10	5.90
	325	A Ashish Reddy	245	149.39	164	8	3.50

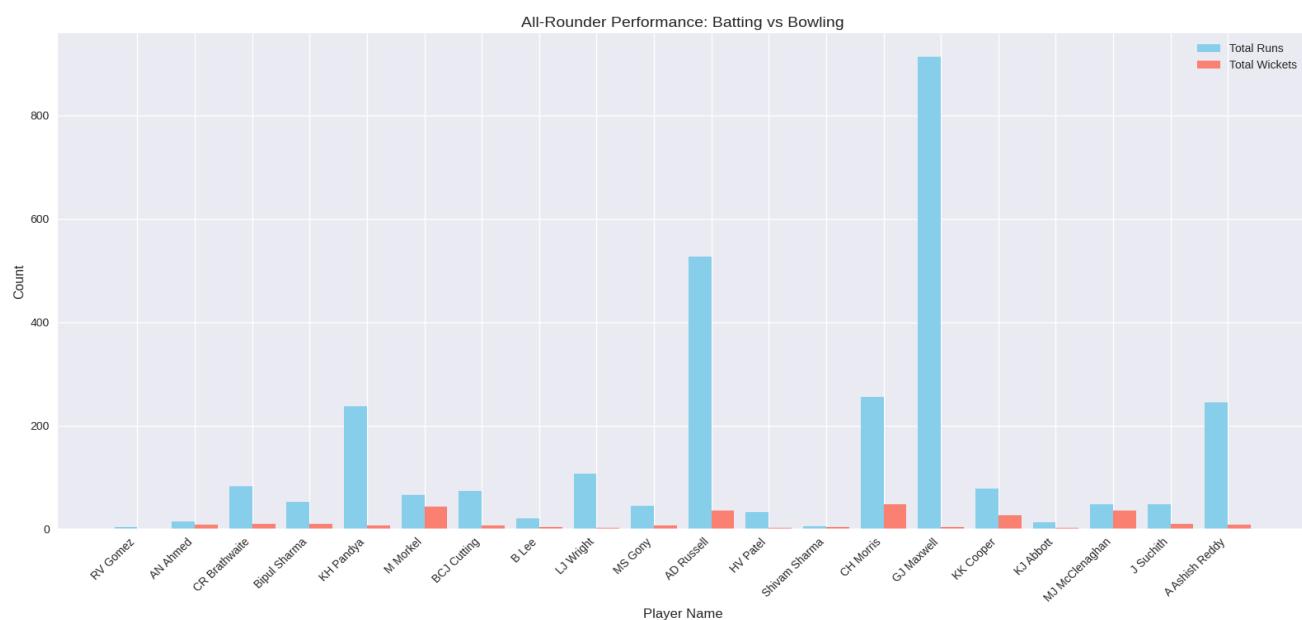
## Top All-Rounder Insights

These players show strong contributions in both batting and bowling:

Player Name	Total Runs	Total Wickets	All-Rounder Notes
AD Russell	527	35	Explosive striker with consistent wickets
CH Morris	256	48	High wicket count and solid batting
MJ McClenaghan	47	36	Bowling specialist with handy runs
KK Cooper	78	26	Balanced contributor in both departments
M Morkel	66	43	Dominant bowler with useful batting

Player Name	Total Runs	Total Wickets	All-Rounder Notes
CR Brathwaite	83	9	Known for clutch performances
KH Pandya	237	7	Reliable lower-order hitter and part-time bowler

Players like AD Russell, CH Morris, and MJ McClenaghan stand out as true all-rounders, contributing heavily with both bat and ball. The chart below visualizes their dual impact spot balanced performers across the dataset.



### Strategic Takeaways

- AD Russell** is the most complete all-rounder with over 500 runs and 35 wickets.
- CH Morris** offers elite bowling and strong batting depth.
- KK Cooper** and **M Morkel** are underrated assets with dual capabilities.
- Players like **GJ Maxwell** and **KH Pandya** are batting-heavy but still offer occasional breakthroughs with the ball.

## 5. Are there players whose presence positively influences the morale and performance of the team? (Justify your answer using visualisation)

Identify players whose presence has a measurable positive impact on their team's performance, particularly by evaluating the team's "**win percentage**" and "**boundaries**" when they are included in matches. The goal is to determine if certain players are correlated with **higher win rates** and **boundaries**, suggesting their influence on team morale and success.

### A.WIN\_PERCENTAGE

#### Required Tables:

1. **player**: Provides player information such as names and IDs.
2. **player\_match**: Contains data on which players participated in each match, including team association.
3. **matches**: Includes match outcomes, identifying the winning team and match details.
4. **team**: Provides team names and IDs.

#### Query Strategy:

1. **Calculate Team Wins with Each Player:**
  - Count the total matches played by each player for their respective team from **player\_match** and **matches**.
  - Sum the matches where the player's team won to determine the number of wins associated with each player's participation.
  - Filter to include only completed matches (**Outcome\_type** = 1).
2. **Calculate Win Percentage:**
  - For each player, calculate the win percentage by dividing **Matches\_Won** by **Total\_Matches** and multiplying by 100.
  - Only include players with more than 5 matches to ensure sufficient data for meaningful results.
3. **Display Results:**

- Select the top 15 players sorted by win percentage, displaying Player\_Name, Team\_Name, Total\_Matches, Matches\_Won, and Win\_Percentage.

**Query:**

```
-- Step 1: Calculate the team's win percentage with each player
WITH PlayerWinStats AS (
    SELECT p.Player_Name, pm.Team_Id, COUNT(m.Match_Id) AS Total_Matches,
           SUM(CASE WHEN m.Match_Winner = pm.Team_Id THEN 1 ELSE 0
           END) AS Matches_Won
    FROM player p
    INNER JOIN player_match pm ON p.Player_Id = pm.Player_Id
    INNER JOIN matches m ON pm.Match_Id = m.Match_Id
    WHERE m.Outcome_type = 1 -- considering only completed matches
    GROUP BY p.Player_Name, pm.Team_Id
),
-- Step 2: Calculate Win Percentage for each player
PlayerWinPercentage AS (
    SELECT pws.Player_Name, pws.Team_Id, pws.Total_Matches,
           pws.Matches_Won,
           ROUND((pws.Matches_Won / NULLIF(pws.Total_Matches, 0)) * 100, 2)
           AS Win_Percentage
    FROM PlayerWinStats pws
    WHERE pws.Total_Matches > 5 -- consider players with more than 5
        matches
)
-- Step 3: Combine Player Performance (runs scored, wickets taken, etc.)
SELECT pwp.Player_Name, t.Team_Name, pwp.Total_Matches,
       pwp.Matches_Won,
       pwp.Win_Percentage
    FROM PlayerWinPercentage pwp
    INNER JOIN team t ON pwp.Team_Id = t.Team_Id
    ORDER BY Win_Percentage DESC
    LIMIT 15;
```

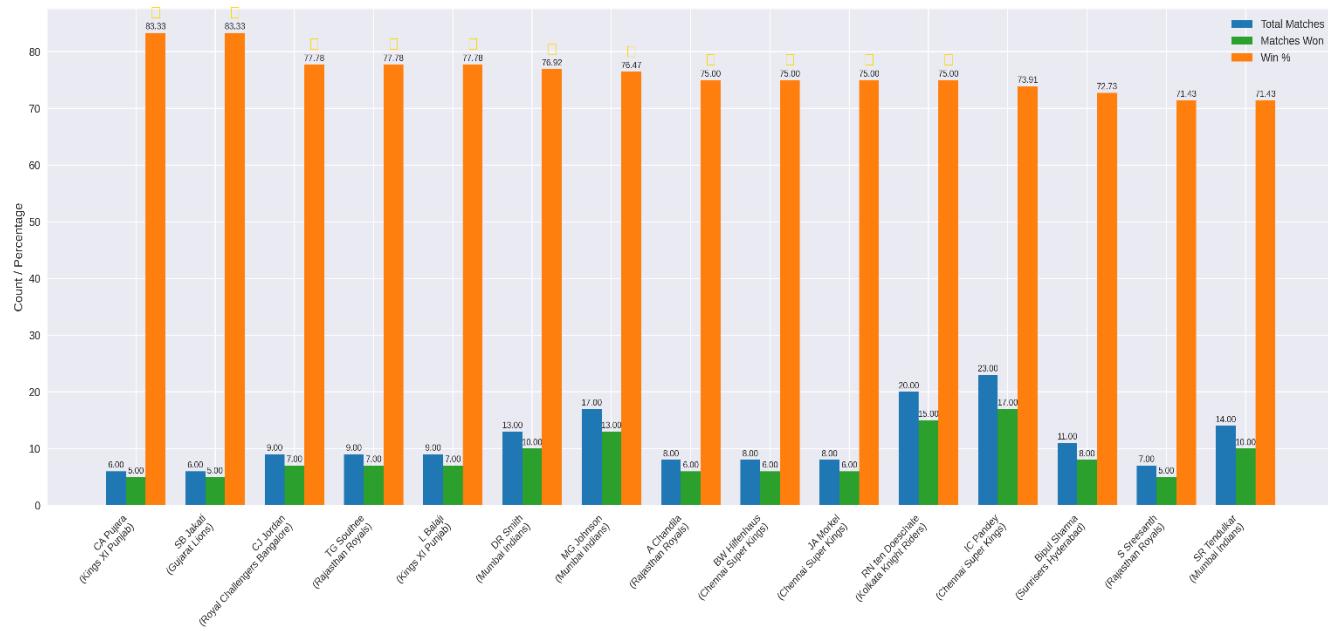
**Output:**

The query provided would produce an output listing the top 15 players with the highest team win percentages when they played

	Player_Name	Team_Name	Total_Matches	Matches_Won	Win_Percentage
▶	CA Pujara	Kings XI Punjab	6	5	83.33
	SB Jakati	Gujarat Lions	6	5	83.33
	CJ Jordan	Royal Challengers Bangalore	9	7	77.78
	TG Southee	Rajasthan Royals	9	7	77.78
	L Balaji	Kings XI Punjab	9	7	77.78
	DR Smith	Mumbai Indians	13	10	76.92
	MG Johnson	Mumbai Indians	17	13	76.47
	A Chandila	Rajasthan Royals	8	6	75.00
	BW Hilfenhaus	Chennai Super Kings	8	6	75.00
	JA Morkel	Chennai Super Kings	8	6	75.00
	RN ten Doeschate	Kolkata Knight Riders	20	15	75.00
	IC Pandey	Chennai Super Kings	23	17	73.91
	Bipul Sharma	Sunrisers Hyderabad	11	8	72.73
	S Sreesanth	Rajasthan Royals	7	5	71.43
	SR Tendulkar	Mumbai Indians	14	10	71.43

**Key Insights**

- **CA Pujara & SB Jakati (83.33%)** → Limited matches but very high win rates, strong situational impact.
- **CJ Jordan, TG Southee, L Balaji (77–78%)** → Consistent performers whose presence correlates with team victories.
- **DR Smith & MG Johnson (76–77%)** → Sustained influence across more matches, showing long-term value.
- **RN ten Doeschate (75%)** → High win rate across 20 matches, proving consistent contribution.
- **SR Tendulkar (71.43%)** → Even in later years, his presence boosted morale and performance.



## B. BOUNDARIES\_IN\_RUNS

- Players with high boundary percentages and total runs are not just performers, they're momentum drivers. Their ability to dominate bowlers and score rapidly can psychologically lift the entire team.

### Why Boundary Efficiency Matters

- Boundary-heavy players reduce pressure** on teammates by scoring quickly.
- They **disrupt opposition strategies**, forcing field changes and bowling adjustments.
- Their presence often **boosts team morale**, especially in tight chases or early breakthroughs.

### Query:

```
WITH cte AS (
-- Extract relevant match details for the 2015 and 2016 seasons
```

```
SELECT bbb.Striker, m.Season_Id, s.Season_Year,
bbb.Match_Id, bbb.Over_Id, bbb.Ball_Id,
bbb.Innings_No, bbb.Runs_Scored
FROM ball_by_ball bbb
JOIN matches m
ON bbb.Match_Id = m.Match_Id
JOIN season s
ON m.Season_Id = s.Season_Id
WHERE s.Season_Year IN (2015, 2016)
),

cte2 AS (
-- Calculate total runs per player
SELECT Striker, SUM(Runs_Scored) AS Total_Runs
FROM cte
GROUP BY Striker
),

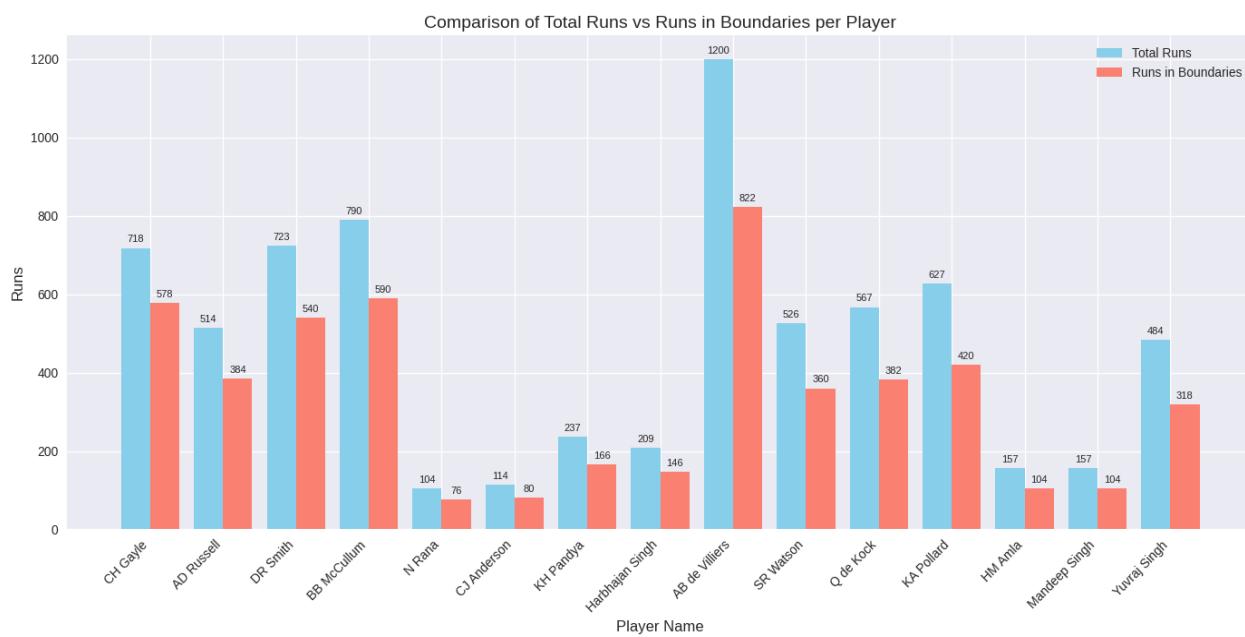
cte3 AS (
-- Calculate runs from boundaries (4s and 6s) per player
SELECT Striker, SUM(Runs_Scored) AS Runs_In_Boundaries
FROM cte
WHERE Runs_Scored IN (4, 6)
GROUP BY Striker
)

-- Final output with boundary percentage calculation
SELECT c2.Striker AS Player_Id, p.Player_Name,
c2.Total_Runs, c3.Runs_In_Boundaries,
ROUND((c3.Runs_In_Boundaries * 100.0 / c2.Total_Runs), 2) AS
Boundary_Percentage
FROM cte2 c2
JOIN cte3 c3 ON c2.Striker = c3.Striker
JOIN player p ON c2.Striker = p.Player_Id
WHERE c2.Total_Runs >= 100
ORDER BY Boundary_Percentage DESC
LIMIT15;
```

### Output:

The query provided would produce an output listing the top 15 players with the highest boundaries when they played

	Player_Id	Player_Name	Total_Runs	Runs_In_Boundaries	Boundary_Percentage
▶	162	CH Gayle	718	578	80.50
	334	AD Russell	514	384	74.71
	147	DR Smith	723	540	74.69
	2	BB McCullum	790	590	74.68
	431	N Rana	104	76	73.08
	372	CJ Anderson	114	80	70.18
	413	KH Pandya	237	166	70.04
	50	Harbhajan Singh	209	146	69.86
	110	AB de Villiers	1200	822	68.50
	32	SR Watson	526	360	68.44
	355	Q de Kock	567	382	67.37
	221	KA Pollard	627	420	66.99
	427	HM Amla	157	104	66.24
	236	Mandeep Singh	157	104	66.24
	27	Yuvraj Singh	484	318	65.70



### Total Runs vs Boundary Runs

The chart compares each player's **Total Runs** and **Runs Scored via Boundaries**, revealing who consistently delivers impactful performances:

- **AB de Villiers:**
  - **Total Runs: 1200, Boundary Runs: 822**
  - Highest overall run scorer, with **68.5%** of runs from boundaries. His consistent scoring and aggressive style likely energise teammates and shift match momentum.

- **CH Gayle:**
  - **Total Runs: 718, Boundary Runs: 578**
  - **80.5%** of runs from boundaries — highest boundary percentage.
  - Known for explosive starts, which can uplift team morale early in innings.
- **BB McCullum:**
  - **Total Runs: 790, Boundary Runs: 590**
  - **74.68%** boundary rate — a reliable power-hitter.
  - His leadership and aggressive batting often set the tone for team confidence.
- **AD Russell & DR Smith:**
  - Both have **>74%** boundary rates, indicating high-impact roles in finishing or accelerating innings.

## 6. What would you suggest to RCB before going to mega auction?

Before RCB heads to the mega auction, the following strategic recommendations can guide them in making valuable selections:

### 1. Emphasise Multi-skilled Players

- **Rationale:** Players who can contribute meaningfully with both bat and ball provide squad depth and tactical flexibility. They reduce dependency on specialists and allow the team to adapt to varying match situations.
- **Analytical Approach:** A scatter plot mapping **runs scored vs. wickets taken** can highlight genuine all-rounders. This visualisation will help identify players who consistently deliver across both disciplines, ensuring RCB secures versatile assets.

### 2. Target Power Hitters for Middle Overs

- **Rationale:** RCB has historically leaned heavily on its top-order batting. To sustain momentum, the team must strengthen its middle order with reliable power hitters who can accelerate scoring between overs 10 and 15.
- **Analytical Approach:** A bar chart comparing **strike rates and average runs scored in middle overs** will spotlight players capable of maintaining high scoring rates under pressure. Such hitters can stabilize innings while keeping the run rate competitive.

### 3. Reinforce Death Bowling Capabilities

- **Rationale:** Death bowling has been a recurring weakness for RCB. Securing bowlers who combine wicket-taking ability with economical spells in the final overs is essential to closing out matches effectively.
- **Analytical Approach:** Line graphs plotting **economy rates and wickets taken in death overs** can visually distinguish bowlers who thrive in high-pressure scenarios. This will aid in identifying specialists who can deliver at the back end of innings.

#### 4. Prioritize Players Suited to Home Conditions

- **Rationale:** The Chinnaswamy Stadium is known for its high-scoring nature and shorter boundaries. Players who excel in such conditions will naturally complement RCB's home advantage.
- **Analytical Approach:** Filtering player data based on **past performance at Chinnaswamy and similar venues**—and visualizing their averages and strike rates—will highlight candidates who can adapt seamlessly to RCB's home ground dynamics.

#### 5. Identify Morale-boosting Players

- **Rationale:** Beyond statistics, team morale and chemistry play a decisive role in sustained success. Players whose presence has historically improved team win percentages bring intangible value to the squad.
- **Analytical Approach:** Win percentage charts mapping **team success rates with specific players across multiple seasons** can help RCB identify individuals who elevate collective performance and inspire confidence on the field.

#### 6. Balance Experience with Emerging Talent

- **Rationale:** A successful squad requires a blend of seasoned campaigners and promising youngsters. Experienced players provide stability and leadership, while emerging talent injects energy and long-term potential.
- **Analytical Approach:** A radar chart combining **experience metrics (matches played, years of career)** with **performance indicators (batting average, strike rate, bowling economy)** can visually balance veterans against rising stars, ensuring a well-rounded roster.

### Conclusion

By integrating these six strategic pillars—multi-skilled versatility, middle-order power hitting, death bowling strength, home-ground adaptability, morale-

boosting presence, and balanced experience—RCB can construct a squad that is not only competitive but also resilient across diverse match scenarios. Leveraging advanced visualizations will provide clarity, enhance decision-making, and ensure that selections are firmly grounded in performance data.

## 7. What do you think could be the factors contributing to the high-scoring matches and the impact on viewership and team strategies?

Several factors contribute to high-scoring matches in cricket, especially in T20 leagues like the IPL, which impact both viewership and team strategies. Here are key contributing elements and their effects:

### 1. Pitch Conditions

- **Flat Surfaces:** Batting-friendly pitches, such as those frequently seen at the M. Chinnaswamy Stadium in Bangalore, minimize seam movement and offer predictable bounce. This environment enables batsmen to play freely, resulting in consistently higher totals.
- **Strategic Impact:** Teams competing on flat tracks often prioritize batting depth and recruit aggressive stroke-makers to maximize scoring potential. For audiences, such matches deliver thrilling spectacles, thereby increasing engagement and viewership.

### 2. Boundary Dimensions

- **Smaller Grounds:** Compact stadiums with shorter boundaries facilitate frequent fours and sixes, accelerating the scoring rate.
- **Strategic Impact:** Franchises tend to assemble squads with power hitters who can exploit these dimensions, aiming to achieve high boundary percentages. For fans, the abundance of boundaries creates excitement and ensures sustained attention throughout the contest.

### 3. Player Skill Levels and Batting Depth

- **Robust Line-ups:** Teams featuring multiple power hitters and extended batting orders can maintain aggression across all phases of the innings, consistently posting imposing totals.
- **Strategic Impact:** Such depth allows franchises to adopt high-risk, high-reward strategies, targeting elevated run rates. For spectators, the intensity

of aggressive batting—especially in close finishes—heightens the drama and appeal of matches.

#### 4. Advances in Batting Techniques and Equipment

- **Modern Innovations:** The evolution of bat technology and the introduction of unconventional strokes (e.g., switch hits, scoops) have expanded scoring options for batsmen.
- **Strategic Impact:** Teams increasingly value players proficient in innovative shot-making, particularly in death overs where rapid scoring is critical. For viewers, these innovations add unpredictability and spectacle, enhancing the entertainment quotient of the game.

#### 5. High Altitude and Weather Conditions

- **Altitude Effects:** At venues situated at higher elevations, the reduced air density allows the ball to travel farther, aiding boundary hitting.
- **Weather Factors:** Conditions such as humidity or dew during night matches often disadvantage bowlers, making it easier for batsmen to dominate.
- **Strategic Impact:** Teams adapt by tailoring strategies—for instance, opting to bowl first in dewy conditions to mitigate fielding challenges. Fans are drawn to the tactical adjustments, appreciating the dynamic nature of the contest.

#### 6. Shorter Game Format

- **Nature of T20:** With only 20 overs per side, every delivery carries heightened importance. This compels batsmen to adopt aggressive approaches, thereby inflating overall scoring rates.
- **Strategic Impact:** Franchises prioritize players capable of sustaining high strike rates, while devising aggressive plans for both powerplay overs and death overs. For audiences, the fast-paced format guarantees continuous excitement and sustained engagement.

### Broader Impacts on Viewership and Team Strategies

- **Enhanced Viewership:** Matches characterized by high totals, frequent boundaries, and tense chases are inherently more appealing, ensuring fans remain engaged throughout.

- **Fan Engagement:** Dramatic finishes and record-breaking scores generate memorable moments, amplifying fan interaction across social media and live events.
- **Strategic Emphasis on Batting Depth:** Teams increasingly invest in building long batting line-ups and recruiting explosive hitters to capitalize on favorable scoring conditions.
- **Integration of Analytics:** Franchises leverage advanced data analysis to tailor batting strategies to venue-specific conditions and opponent weaknesses, optimizing line-ups and shot selections for maximum impact.

### Query:

```
SELECT
    v.venue_name,
    COUNT(DISTINCT m.match_id) AS total_matches,
    AVG(match_runs.total_runs) AS avg_runs_per_match,
    SUM(match_runs.total_runs) AS total_runs_all_matches
FROM venue v
JOIN matches m
ON v.venue_id = m.venue_id
JOIN (
    SELECT
        bbb.match_id,
        SUM(bbb.runs_scored + COALESCE(er.extra_runs, 0)) AS total_runs
    FROM ball_by_ball bbb
    LEFT JOIN extra_runs er
    ON bbb.match_id = er.match_id
    AND bbb.over_id = er.over_id
    AND bbb.ball_id = er.ball_id
)
```

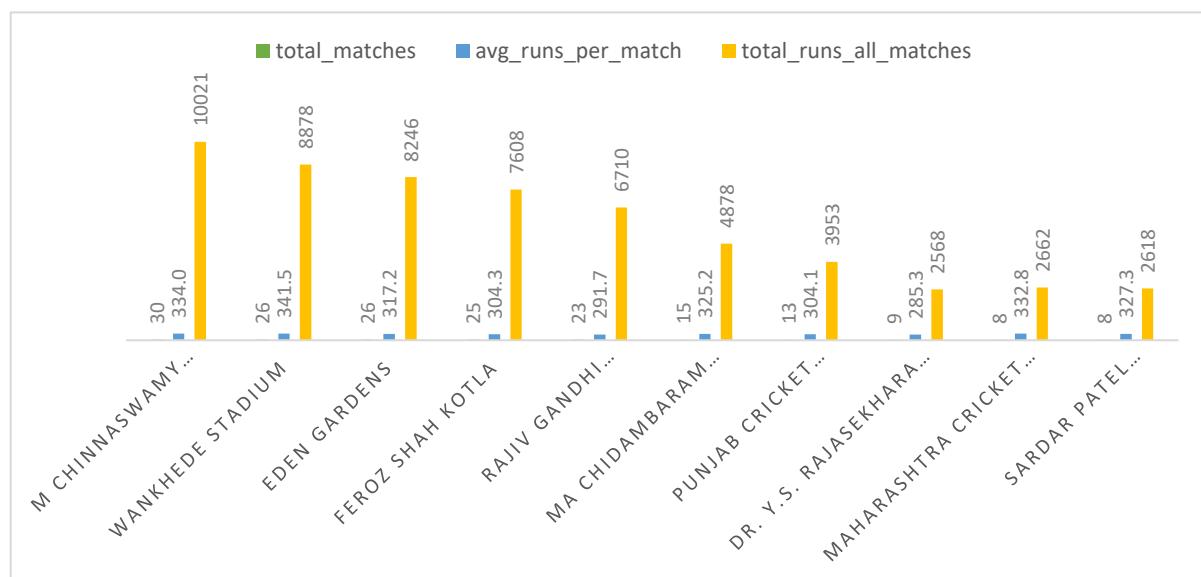
```

GROUP BY bbb.match_id
) match_runs
ON m.match_id = match_runs.match_id
GROUP BY v.venue_name
ORDER BY total_matches DESC, avg_runs_per_match DESC
LIMIT 10;

```

### Output:

	venue_name	total_matches	avg_runs_per_match	total_runs_all_matches
▶	M Chinnaswamy Stadium	30	334.0333	10021
	Wankhede Stadium	26	341.4615	8878
	Eden Gardens	26	317.1538	8246
	Feroz Shah Kotla	25	304.3200	7608
	Rajiv Gandhi International Stadium, Uppal	23	291.7391	6710
	MA Chidambaram Stadium, Chepauk	15	325.2000	4878
	Punjab Cricket Association Stadium, Mohali	13	304.0769	3953
	Dr. Y.S. Rajasekhara Reddy ACA-VDCA Cricket ...	9	285.3333	2568
	Maharashtra Cricket Association Stadium	8	332.7500	2662
	Sardar Patel Stadium, Motera	8	327.2500	2618



## Conclusion

High-scoring matches at these venues are primarily driven by batting-friendly pitch conditions, shorter boundary dimensions, and the inherently aggressive nature of the T20 format, as reflected by average match totals exceeding 300 runs at most grounds. Frequent usage of these venues allows teams to better understand conditions, encouraging attacking batting approaches from the outset. Such high-scoring contests enhance viewership by delivering frequent boundaries, high run rates, and close finishes, which sustain audience engagement. Consequently, teams adapt their strategies by prioritizing batting depth, power hitters, and bowling plans focused on damage control rather than wicket-taking.

### **8. Analyze the impact of home ground advantage on team performance and identify strategies to maximize this advantage for RCB.**

The goal is to analyse the impact of home ground advantage for Royal Challengers Bangalore (RCB) by examining performance at the M. Chinnaswamy Stadium. Key factors include how pitch conditions, boundary size, and crowd support influence match outcomes. Additionally, this analysis aims to identify strategies that RCB can adopt to maximize their success at their home venue.

**The following factors impact the home ground advantage on team performance**

#### **# Home vs Away Win/Loss record**

Home vs. away win percentage is crucial because it quantifies the impact of venue conditions on team performance, reveals the strength of home ground advantage, and provides actionable insights for refining strategies in team selection, match tactics, and resource planning.

**Query:**

```

WITH win_loss_record AS (
SELECT m.Match_Id, v.Venue_Name,
CASE WHEN m.Match_Winner = 2 THEN 'Win' ELSE 'Loss'
END AS Result,
CASE WHEN v.Venue_Id = 1 THEN 'Home' ELSE 'Away'
END AS Venue_Type
FROM matches m
JOIN venue v ON m.Venue_Id = v.Venue_Id
WHERE (m.Team_1 = 2 OR m.Team_2 = 2) AND Outcome_type != 2
)
SELECT
Venue_Type,
COUNT(CASE WHEN Result = 'Win' THEN 1 END) AS Wins,
COUNT(CASE WHEN Result = 'Loss' THEN 1 END) AS Losses,
COUNT(*) AS Total_Matches,
ROUND(COUNT(CASE WHEN Result = 'Win' THEN 1 END) / COUNT(*) * 100, 2) AS Win_Percentage
FROM win_loss_record
GROUP BY Venue_Type;

```

**Output:**

	Venue_Type	Wins	Losses	Total_Matches	Win_Percentage
▶	Home	16	11	27	59.26
	Away	15	18	33	45.45

**Win Percentage Advantage**

- **Home:** 59.26% win rate
- **Away:** 45.45% win rate
- **Delta:** +13.81 percentage points at home → This is a statistically meaningful uplift, showing RCB performs significantly better at M. Chinnaswamy Stadium.

## #Home vs away batting performance

Home vs. away batting performance is important because it reveals how venue conditions influence scoring ability, helping teams tailor their batting strategy, player roles, and match planning to maximize success in familiar environments and adapt effectively in challenging ones.

### Query:

```
WITH rcb_run_stats AS (
SELECT m.Match_Id, v.Venue_Name,
CASE WHEN v.Venue_Id = 1 THEN 'Home' ELSE 'Away' END AS
Venue_Type,
SUM(CASE WHEN bb.Team_Batting = 2 THEN bb.Runs_Scored ELSE 0
END) AS Runs_Scored,
SUM(CASE WHEN bb.Team_Bowling = 2 THEN bb.Runs_Scored ELSE 0
END) AS Runs_Conceded
FROM matches m
JOIN venue v ON m.Venue_Id = v.Venue_Id
JOIN ball_by_ball bb ON m.Match_Id = bb.Match_Id
WHERE (m.Team_1 = 2 OR m.Team_2 = 2) -- 2 is the team ID for RCB
GROUP BY m.Match_Id, v.Venue_Name
)
SELECT Venue_Type,
ROUND(AVG(Runs_Scored), 2) AS Avg_Runs_Scored,
ROUND(SUM(Runs_Scored), 2) AS Total_Runs_Scored
FROM rcb_run_stats
GROUP BY Venue_Type;
```

### Output:

	Venue_Type	Avg_Runs_Scored	Total_Runs_Scored
▶	Home	163.24	4734
	Away	144.45	4767

- Batting uplift at home: RCB scores nearly 19 more runs per match at home than away. This is a substantial margin in T20 cricket, often the difference between winning and losing.
- Total runs parity: Despite playing fewer matches at home, the total runs scored are nearly equal, reinforcing the idea that Chinnaswamy is a high-scoring venue.
- Pitch behaviour: The surface at Chinnaswamy is known for its true bounce and short boundaries, favouring aggressive stroke play and boundary-heavy innings.

## Strategic key factor for RCB

### 1. Team Selection

- Powerplay hitters: Choose openers with high boundary % and strike rate in the first 6 overs to exploit favourable conditions.
- Middle-order anchors: Include batters who rotate strike well and accelerate against spin, maintaining momentum through overs 7–15.
- Finishers: Prioritize players with SR >180 in death overs and a strong hitting range across the arc.

### 2. Batting Tactics

- Boundary targeting: Use matchups to exploit short boundaries early; pre-plan hitting zones based on bowler types.
- Death overs blueprint: Assign roles for specific bowlers e.g., one finisher for wide yorkers, another for short balls.
- Chasing strategy: Given consistent scoring conditions, chasing can be advantageous—prepare flexible batting scripts.

### 3. Bowling Adjustments

- Variation-heavy pace: Use slower balls, cutters, and wide yorkers to counter the batting-friendly pitch.
- Spin matchups: Deploy wrist spinners against batters with low SR vs spin; avoid defensive off-spin unless conditions favor.
- Fielding focus: Position athletic boundary riders to protect key zones deep midwicket, long-on, long-off.

### 4. Pitch Preparation

- Prepare slightly firm surfaces with even bounce to suit RCB's batting while retaining grip for slower balls.
- Align boundary dimensions to favour RCB's bowling plans, longer boundaries on off-side for right-handers.

## 5. Fan Engagement & Psychological Edge

- Use crowd energy to amplify pressure moments, especially during death overs and tight chases.
- Display matchup stats and tactical cues on screens to engage fans and boost team morale.

## Conclusion

RCB's home ground advantage is driven by a clear batting uplift, with higher average runs and favorable conditions at Chinnaswamy. To maximize this edge, RCB should lean into aggressive batting strategies, role-specific team selection, and tactical bowling plans tailored to the venue's dynamics. With smart execution and crowd synergy, home matches can become a strategic stronghold for the team.

## #Home vs away bowling performance

**Home vs. away bowling performance** is essential because it reveals how venue conditions affect bowling effectiveness, helping teams:

- **Tailor bowling strategies** to suit pitch behavior and boundary dimensions.
- **Select bowlers** who thrive in high-scoring environments with variation and control.
- **Plan fielding setups** to minimize boundary leakage and support bowlers under pressure.
- **Benchmark performance** to identify tactical gaps and training needs specific to home conditions.

This insight is especially critical for RCB, as its home ground is known for being a batting-friendly venue. Without adapting their bowling approach, they risk losing their home advantage despite strong batting.

## Query:

```
WITH bowling_performance AS (
SELECT v.Venue_Name,
CASE WHEN v.Venue_Id = 1 THEN 'Home' ELSE 'Away' END AS
Venue_Type,
```

```

SUM(CASE WHEN bb.Team_Bowling = 2 THEN bb.Runs_Scored ELSE 0
END) AS Runs_Conceded,
COUNT(CASE WHEN bb.Team_Bowling = 2 AND w.Player_Out IS NOT
NULL THEN 1 ELSE NULL END) AS Wickets_Taken,
COUNT(CASE WHEN bb.Team_Bowling = 2 THEN bb.Ball_Id ELSE NULL
END) AS Balls_Bowled
FROM matches m
JOIN venue v ON m.Venue_Id = v.Venue_Id
JOIN ball_by_ball bb ON m.Match_Id = bb.Match_Id
LEFT JOIN wicket_taken w ON bb.Match_Id = w.Match_Id
AND bb.Over_Id = w.Over_Id
AND bb.Ball_Id = w.Ball_Id
AND bb.Innings_No = w.Innings_No -- Ensuring correct innings mapping
WHERE (m.Team_1 = 2 OR m.Team_2 = 2) -- 2 is the team ID for RCB
GROUP BY v.Venue_Name,Venue_Type
)
SELECT Venue_Type,
ROUND(SUM(Wickets_taken),2) AS Total_Wickets_taken,
ROUND(SUM(Runs_Conceded) / SUM(Balls_Bowled), 2) AS Economy_Rate
FROM bowling_performance
GROUP BY Venue_Type;

```

### Output:

	Venue_Type	Total_Wickets_taken	Economy_Rate
▶	Home	178	1.30
	Away	202	1.24

**Wickets:** RCB bowlers took 24 fewer wickets at home than away, despite playing fewer matches. This suggests that Chinnaswamy's pitch is less conducive to wicket-taking.

**Economy Rate:** Bowlers concede more runs per over at home (1.30 vs 1.24), indicating that run containment is harder at Chinnaswamy.

**Venue impact:** The home ground favors batters, making bowling more challenging. RCB's bowlers must adapt with smarter variations and field placements.

## OVERALLVIEW:

Metric	Home	Away	Impact
Avg Runs Scored	163.24	144.45	+18.79 runs at home → batting-friendly pitch
Economy Rate	1.30	1.24	Higher at home → bowlers leak more runs
Wickets Taken	178	202	Fewer wickets at home → flatter surface
Total Runs Scored	4734	4767	Similar totals, but home matches yield higher per-match scoring

## KEY ASPECTS OF HOME GROUND ADVANTAGE FOR RCB

### 1. Pitch Characteristics

- The Chinnaswamy pitch is batting-friendly, encouraging high run rates. RCB should prioritize a batting lineup with explosive hitters and strong death-over scorers.

### 2. Boundary Size

- Short boundaries favour big hitters and spinners who can prompt risky shots. RCB should select powerful batters and spin bowlers skilled at containing runs and inducing errors.

### 3. Weather and Altitude Conditions

- Bangalore's altitude helps the ball travel farther, which aids batsmen. Dew in night matches challenges bowlers, so RCB may benefit from chasing rather than defending.

### 4. Crowd Support

- The passionate fanbase provides morale support and pressures opponents, making Chinnaswamy a challenging venue for visiting teams.

## STRATEGIES TO MAXIMIZE HOME GROUND ADVANTAGE

### 1. Strengthening Batting Power

- Stack the line-up with high strike-rate players and consistent six-hitters to take advantage of small boundaries.

### 2. Leveraging Spin and Variation

- Focus on spinners with variety, such as googlies, to limit scoring and create wicket opportunities.

### 3. Prioritizing Quick Scoring in Powerplay and Strong Fielding

- Quick openers and agile fielders help set a high pace and defend totals effectively in high-scoring conditions.

### 4. Utilizing Death-Bowling Specialists

- Invest in bowlers who attempt Yorkers and variations to maintain control in dew conditions.

### 5. Adapting Strategies Based on Opponents

- Tailor bowler selections and field setups based on analytics of opponent weaknesses.

### 6. Boosting Morale through Fan Engagement

- Engage fans actively to maintain high morale, adding psychological advantage and making Chinnaswamy a fortress.

**Conclusion:** Chinnaswamy favors batters. RCB's home advantage is driven by batting uplift, not bowling dominance.

## 9. Come up with a visual and analytical analysis with the RCB past seasons performance and potential reasons for them not winning a trophy.

Analysing Royal Challengers Bangalore's (RCB) performance over IPL seasons involves studying win-loss patterns, individual player contributions, and match scenarios (home vs. away, chasing vs. defending). This analysis helps understand reasons behind RCB's struggles to secure a title. Here's a structured approach with query details, table requirements, and potential insights.

1. Analyse RCB's **overall season performance**.
2. Examine **venue-wise performance**, comparing **home vs. away** matches.
3. Investigate RCB's **success rate in chasing vs. defending** games.
4. Review **key players' contributions** (batting and bowling) seasonally.

### Required Tables:

Table Name	Purpose	Key Columns
<b>Matches</b>	Stores match-level details; foundation for win/loss, season, and venue analysis.	Match_Id, Season_Id, Team_1, Team_2, Match_Winner, Venue_Id, Outcome_Type
<b>Team</b>	Reference table for team identities; maps IDs to readable names.	Team_Id, Team_Name
<b>Venue</b>	Reference table for stadiums/grounds; supports home vs. away comparisons.	Venue_Id, Venue_Name
<b>Player</b>	Master table of player identities; links players to teams and matches.	Player_Id, Player_Name, Team_Id
<b>Player_Match</b>	Player-level statistics per match; tracks contributions across games.	Match_Id, Player_Id, Runs_Scored, Wickets_Taken

Table Name	Purpose	Key Columns
Ball_By_Ball	Delivery-level detail enables advanced batting/bowling analytics.	Match_Id,Over_No, Ball_No,Batsman_Id, Bowler_Id,Runs_Scored, Dismissal_Type

## Query Strategy Breakdown:

### 1. Season-wise Performance

- **Objective:** Calculate RCB's win-loss stats and win percentage for each season.
- **Query Explanation:**
  - Aggregate RCB's matches per season.
  - Count wins and losses by checking if the match winner matches RCB's team ID.
  - Calculate the win percentage.
- **Output:** Season\_Year, Matches\_Played, Matches\_Won, Matches\_Lost, Win\_Percentage.

### 2. Venue-wise Performance

- **Objective:** Assess RCB's performance across different venues.
- **Query Explanation:**
  - Group RCB's matches by venue and count total matches and wins at each location.
  - Calculate win percentage for each venue.
- **Output:** Venue\_Name, Matches\_Played, Wins, Win\_Percentage.

### 3. Home vs. Away Performance

- **Objective:** Compare RCB's performance at home (M. Chinnaswamy Stadium) vs. away/neutral venues.
- **Query Explanation:**
  - Categorize matches into Home or Away/Neutral.
  - Count total matches and wins for each category.
  - Calculate win percentage for each location type.
- **Output:** Venue\_Category, Matches\_Played, Wins, Win\_Percentage.

### 4. Chasing vs. Defending Performance

- **Objective:** Analyze RCB's record when chasing versus defending.
- **Query Explanation:**
  - Classify each match as Batting First or Batting Second based on toss decisions and outcomes.
  - Count total matches and wins for each strategy.
  - Calculate win percentage for chasing vs. defending.
- **Output:** Game\_Strategy, Matches\_Played, Wins, Win\_Percentage.

## 5. Key Players' Performance Across Seasons

- **Objective:** Track runs scored and wickets taken by RCB's key players across seasons.
- **Query Explanation:**
  - Sum runs and count wickets for each player by season.
  - Join Ball\_By\_Ball data with Batsman\_Scored and Wicket\_Taken to retrieve batting and bowling stats.
- **Output:** Player\_Name, Season\_Id, Total\_Runs, Total\_Wickets.

### Query: 1 Season wise Performance

```

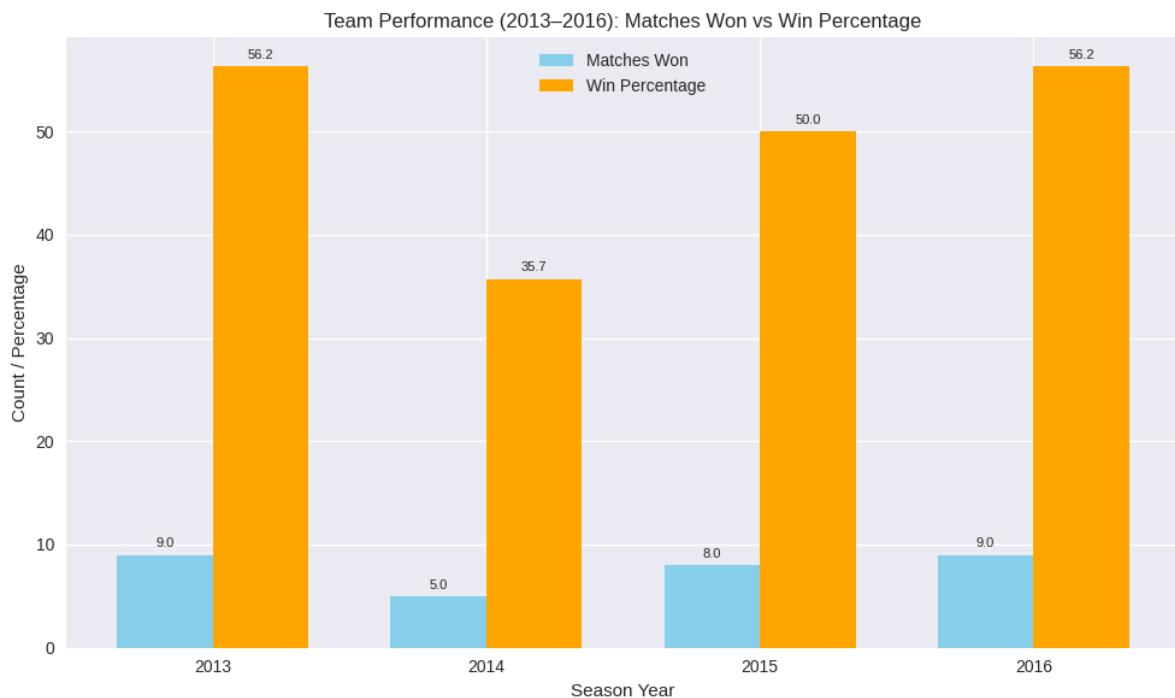
WITH RCB_Performance AS (
SELECT m.Season_Id, COUNT(m.Match_Id) AS Matches_Played,
SUM(CASE WHEN m.Match_Winner = t.Team_Id THEN 1 ELSE 0 END) AS Matches_Won,
(COUNT(m.Match_Id) - SUM(CASE WHEN m.Match_Winner = t.Team_Id
THEN 1 ELSE 0 END)) AS Matches_Lost,
(SUM(CASE WHEN m.Match_Winner = t.Team_Id THEN 1 ELSE 0 END) /
COUNT(m.Match_Id)) * 100 AS Win_Percentage
FROM matches m
INNER JOIN team t ON (t.Team_Id = m.Team_1 OR t.Team_Id = m.Team_2)
WHERE t.Team_Name = 'Royal Challengers Bangalore'
GROUP BY m.Season_Id
)
SELECT s.Season_Year, rp.Matches_Played, rp.Matches_Won,
rp.Matches_Lost, rp.Win_Percentage
FROM RCB_Performance rp
INNER JOIN season s ON rp.Season_Id = s.Season_Id

```

ORDER BY s.Season\_Year;

### Output:

	Season_Year	Matches_Played	Matches_Won	Matches_Lost	Win_Percentage
▶	2013	16	9	7	56.2500
	2014	14	5	9	35.7143
	2015	16	8	8	50.0000
	2016	16	9	7	56.2500



- **2013 and 2016** had identical win percentages (**56.25%**) and match outcomes (9 wins, 7 losses), indicating consistent performance in those years.
- **2014** was the weakest season with only **5 wins** and a **35.71%-win rate**, suggesting strategic or squad issues.
- **2015** showed balanced results (8 wins, 8 losses) with a **50%-win rate**, reflecting a neutral season.

## Query 2 Venue-wise Performance:

Evaluating performance by venue is critical because cricket outcomes are heavily influenced by local conditions such as pitch behavior, boundary dimensions, and crowd support. By comparing matches played, wins, and win percentage across stadiums, we can identify where the team thrives and where it struggles, enabling venue-specific strategies.

### Query:

```
WITH VenuePerformance AS (
    SELECT v.Venue_Name, COUNT(*) AS Matches_Played,
           SUM(CASE WHEN m.Match_Winner = t.Team_Id THEN 1 ELSE 0 END) AS Wins
      FROM matches m
     JOIN team t ON t.Team_Id IN (m.Team_1, m.Team_2)
     JOIN venue v ON m.Venue_Id = v.Venue_Id
     WHERE (t.Team_Id = m.Team_1 OR t.Team_Id = m.Team_2)
       AND t.Team_Name = 'Royal Challengers Bangalore' -- Only consider RCB's
                                                 matches
     GROUP BY v.Venue_Name
),
WinPercentage AS (
    SELECT Venue_Name, Matches_Played, Wins,
           (1.0 * Wins / Matches_Played) * 100 AS Win_Percentage
      FROM VenuePerformance
)
SELECT Venue_Name, Matches_Played, Wins, Win_Percentage
      FROM WinPercentage
     ORDER BY Win_Percentage DESC;
```

**Output:**

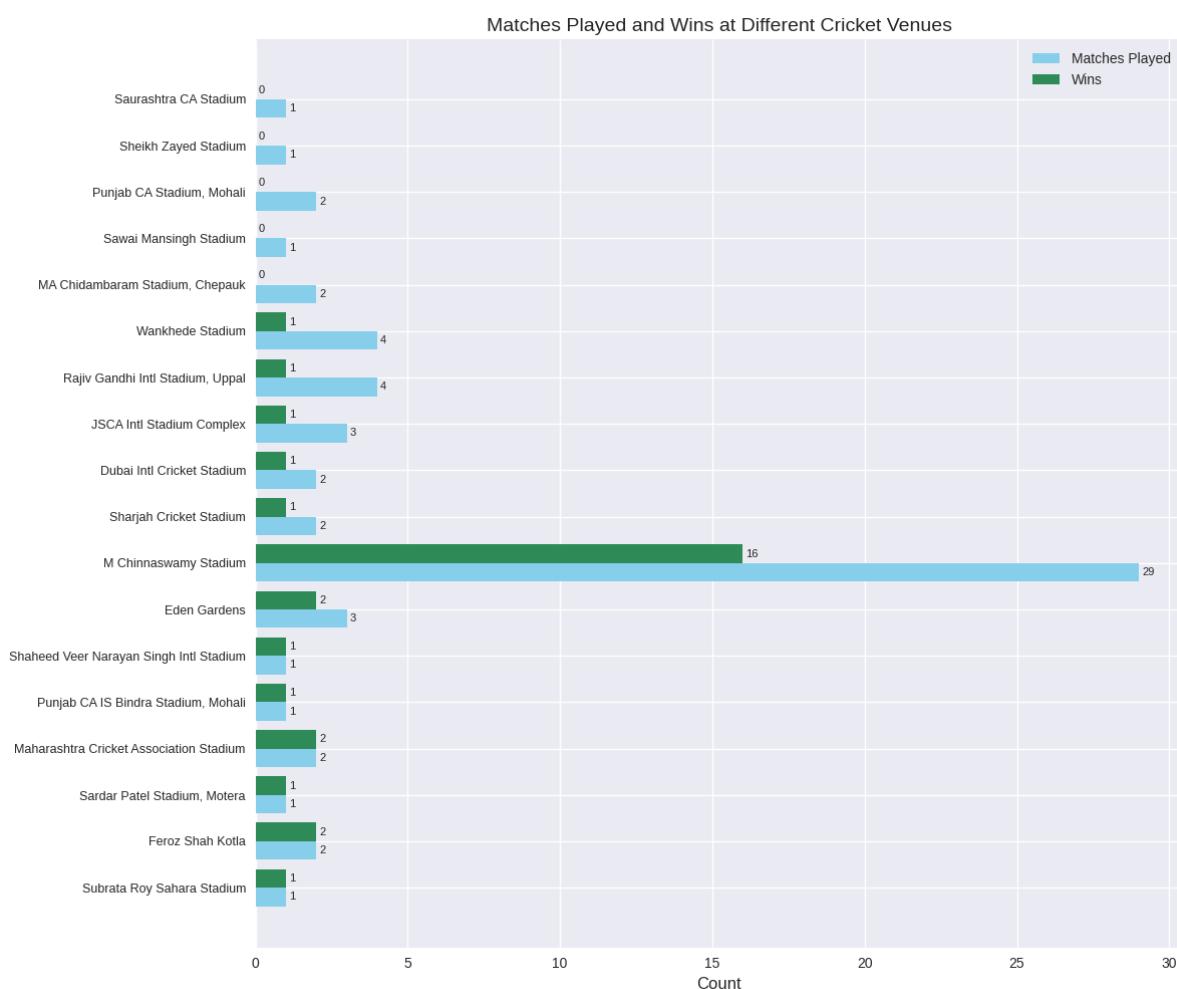
	Venue_Name	Matches_Played	Wins	Win_Percentage
►	Subrata Roy Sahara Stadium	1	1	100.00000
	Feroz Shah Kotla	2	2	100.00000
	Sardar Patel Stadium, Motera	1	1	100.00000
	Maharashtra Cricket Association Stadium	2	2	100.00000
	Punjab Cricket Association IS Bindra Stadium, M...	1	1	100.00000
	Shaheed Veer Narayan Singh International Stad...	1	1	100.00000
	Eden Gardens	3	2	66.66667
	M Chinnaswamy Stadium	29	16	55.17241
	Sharjah Cricket Stadium	2	1	50.00000
	Dubai International Cricket Stadium	2	1	50.00000
	JSCA International Stadium Complex	3	1	33.33333
	Rajiv Gandhi International Stadium, Uppal	4	1	25.00000
	Wankhede Stadium	4	1	25.00000
	MA Chidambaram Stadium, Chepauk	2	0	0.00000
	Sawai Mansingh Stadium	1	0	0.00000
	Punjab Cricket Association Stadium, Mohali	2	0	0.00000
	Sheikh Zayed Stadium	1	0	0.00000
	Saurashtra Cricket Association Stadium	1	0	0.00000

- **High Success Venues (100% win rate):** Stadiums like *Feroz Shah Kotla*, *Motera*, *Pune*, *Mohali (IS Bindra)*, and *Raipur* show perfect records. While encouraging, these results are not statistically strong enough to guarantee future success.
- **Moderate Success Venues:**
  - *Eden Gardens* (66.67%) demonstrates strong adaptability in a traditionally spin-friendly environment.
  - *M. Chinnaswamy Stadium* (29 matches, 16 wins, 55.17%) Despite being a batting-friendly ground, the team has managed a slightly above-average win rate, showing that home advantage is real but not overwhelming.
- **Challenging Venues:**
  - *Wankhede Stadium* and *Rajiv Gandhi International Stadium* show win rates of only 25%.
  - *MA Chidambaram Stadium* and *Sawai Mansingh Stadium* reflect a 0% win rate, highlighting persistent struggles in Chennai and Jaipur.

These venues demand tactical adjustments, especially in bowling composition and batting order.

### 3. Strategic Implications

- **Home Ground (Chinnaswamy):** the team's moderate success here suggests room for improvement. Strategies should focus on leveraging batting firepower while refining bowling plans to counter the high-scoring nature of the pitch.
- **Away Venues:**
  - At low-success venues, the team must adapt by selecting bowlers suited to local conditions (e.g., spinners in Chennai, swing bowlers in Mumbai).
  - Batting line-ups should be adjusted to counter venue-specific challenges, such as slower pitches or larger boundaries.

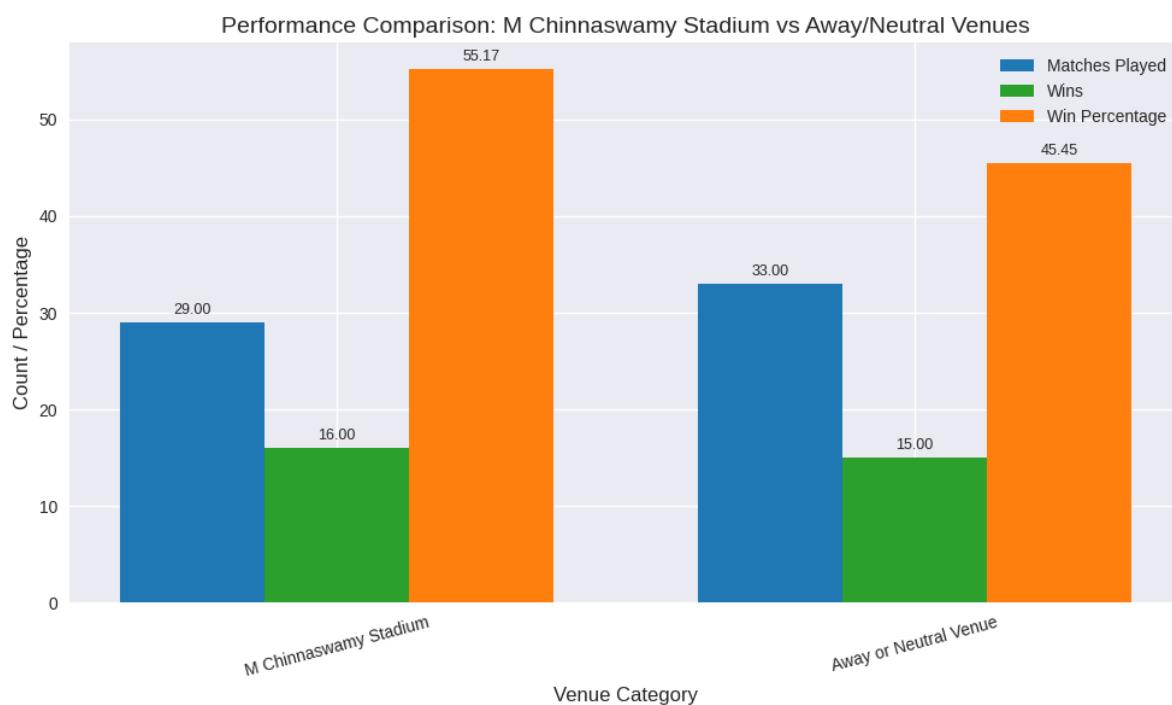


**Query 3 Home and away performance:**

```
WITH VenuePerformance AS (
    SELECT
        CASE WHEN v.Venue_Name = 'M Chinnaswamy Stadium' THEN 'M
Chinnaswamy Stadium'
        ELSE 'Away or Neutral Venue' END AS Venue_Category,
        COUNT(*) AS Matches_Played,
        SUM(CASE WHEN m.Match_Winner = t.Team_Id THEN 1 ELSE 0 END) AS
        Wins
    FROM matches m
    JOIN team t ON t.Team_Id IN (m.Team_1, m.Team_2)
    JOIN venue v ON m.Venue_Id = v.Venue_Id
    WHERE (t.Team_Id = m.Team_1 OR t.Team_Id = m.Team_2)
    AND t.Team_Name = 'Royal Challengers Bangalore' -- Only consider RCB's
    matches
    GROUP BY
        CASE WHEN v.Venue_Name = 'M Chinnaswamy Stadium' THEN 'M
Chinnaswamy Stadium'
        ELSE 'Away or Neutral Venue' END
    ),
    WinPercentage AS (
        SELECT
            Venue_Category, Matches_Played, Wins,
            (1.0 * Wins / Matches_Played) * 100 AS Win_Percentage
        FROM VenuePerformance
    )
    SELECT
        Venue_Category, Matches_Played, Wins, Win_Percentage
    FROM WinPercentage
    ORDER BY Venue_Category DESC;
```

**Output:**

	Venue_Category	Matches_Played	Wins	Win_Percentage
▶	M Chinnaswamy Stadium	29	16	55.17241
	Away or Neutral Venue	33	15	45.45455

**Query 4 Chasing vs Defending:**

```

WITH MatchRecords AS (
SELECT
t.Team_Name,
CASE
WHEN (m.Team_1 = t.Team_Id AND m.Toss_Winner = m.Team_1 AND
m.Toss_Decide = 'bat') OR
(m.Team_2 = t.Team_Id AND m.Toss_Winner = m.Team_2 AND
m.Toss_Decide = 'bat') THEN 'Batting First'

```

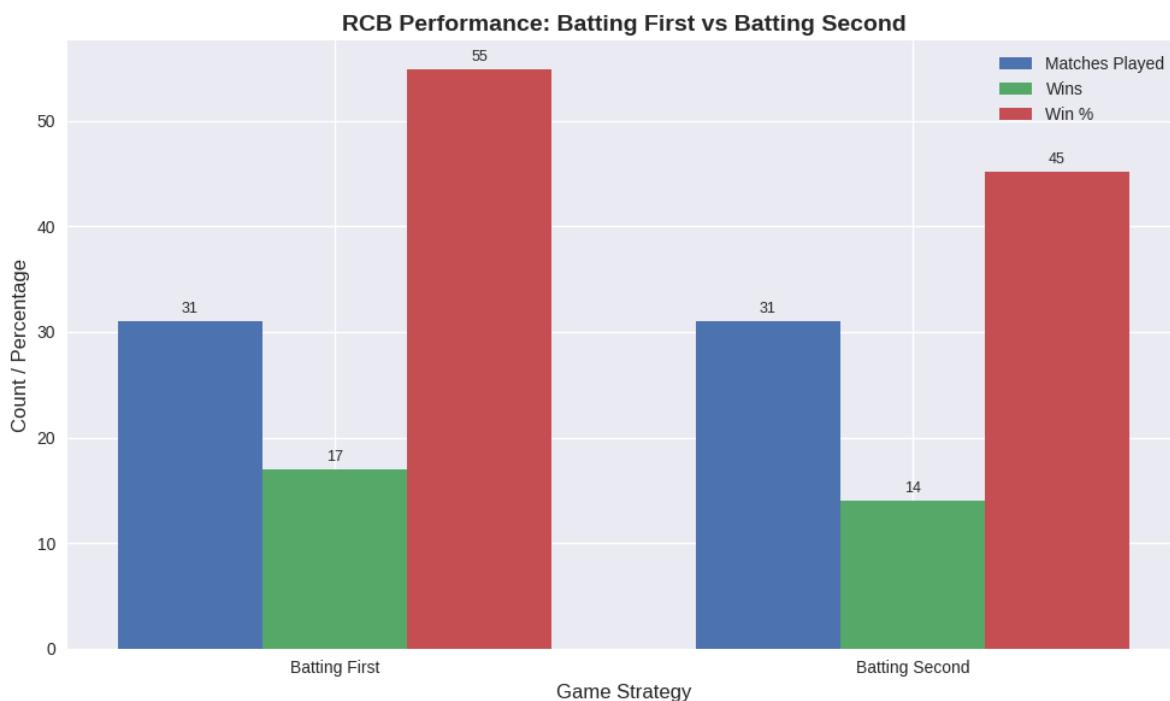
```

WHEN (m.Team_1 = t.Team_Id AND m.Toss_Winner = m.Team_1 AND
m.Toss_Decide = 'field') OR
(m.Team_2 = t.Team_Id AND m.Toss_Winner = m.Team_2 AND
m.Toss_Decide = 'field') THEN 'Batting Second'
ELSE
CASE WHEN m.Team_1 = t.Team_Id THEN 'Batting First'WHEN m.Team_2
= t.Team_Id THEN 'Batting Second'
END
END AS Game_Strategy,
COUNT(*) AS Matches_Played,
SUM(CASE WHEN m.Match_Winner = t.Team_Id THEN 1 ELSE 0 END) AS
Wins
FROM matches m
JOIN team t ON t.Team_Id IN (m.Team_1, m.Team_2)
WHERE t.Team_Name = 'Royal Challengers Bangalore' -- Filter for RCB
matches only
GROUP BY t.Team_Name, Game_Strategy
),
WinPercentage AS (
SELECT
Team_Name, Game_Strategy, Matches_Played, Wins,
(1.0 * Wins / Matches_Played) * 100 AS Win_Percentage
FROM MatchRecords
)
SELECT
Team_Name, Game_Strategy, Matches_Played, Wins, Win_Percentage
FROM WinPercentage
ORDER BY Win_Percentage DESC;

```

**Output:**

	Team_Name	Game_Strategy	Matches_Played	Wins	Win_Percentage
▶	Royal Challengers Bangalore	Batting First	31	17	54.83871
	Royal Challengers Bangalore	Batting Second	31	14	45.16129



### Insights from the Chart:

- Batting First yields better results:** RCB has a higher win percentage when setting a target, suggesting stronger control over match tempo and scoreboard pressure.
- Equal match count:** Both strategies have been used equally (31 matches each), making the comparison statistically balanced.
- Tactical implication:** When winning the toss, RCB may benefit from choosing to bat first, especially at venues where defending totals is historically favorable.

### # Batting performance each season

#### Query:

```
WITH rcb_batting_in_powerplay AS (
SELECT bb.Match_Id, bb.Innings_No, bb.Striker AS Batsman_Id,
p.Player_Name,
SUM(bb.Runs_Scored) AS total_runs_in_power_play,
COUNT(bb.Ball_Id) AS balls_faced_in_power_play
FROM Ball_by_Ball bb
```

```

JOIN Matches m ON bb.Match_Id = m.Match_Id
JOIN Player p ON bb.Striker = p.Player_Id
WHERE (m.Team_1 = 2 OR m.Team_2 = 2)
AND bb.Over_Id BETWEEN 1 AND 6
GROUP BY bb.Match_Id, bb.Innings_No, bb.Striker, p.Player_Name
)
SELECT rcb.Player_Name,
SUM(rcb.total_runs_in_power_play) AS total_runs_in_power_play,
SUM(rcb.balls_faced_in_power_play) AS total_balls_faced_in_powerplay,
ROUND((SUM(rcb.total_runs_in_power_play) /
NULLIF(SUM(rcb.balls_faced_in_power_play), 0)) * 100, 2) AS
strike_rate_in_power_play
FROM rcb_batting_in_powerplay rcb
GROUP BY rcb.Player_Name
HAVING total_balls_faced_in_powerplay > 100
ORDER BY strike_rate_in_power_play DESC;

```

## Output:

	Season_Id	Player_Name	total_runs_in_power_play	total_balls_faced_in_powerplay	strike_rate_in_power_play
▶	6	CH Gayle	285	220	129.55
	6	V Kohli	158	126	125.40
	7	CH Gayle	150	135	111.11
	7	PA Patel	130	129	100.78
	8	CH Gayle	300	234	128.21
	8	V Kohli	204	180	113.33
	9	KL Rahul	163	119	136.97
	9	CH Gayle	151	123	122.76
	9	V Kohli	274	233	117.60

## Potential Reasons for RCB's Title Struggles

### 1. Heavy Dependence on Key Players:

- Over-reliance on players like Virat Kohli and AB de Villiers might cause inconsistency.

### 2. Bowling Limitations:

- RCB has been known for strong batting but weaker bowling, affecting their ability to defend totals.

### 3. Home Ground Dependence:

- M. Chinnaswamy's smaller boundaries favor batting, potentially skewing performance in high-stakes away/neutral venue matches.

### 4. Inconsistency in Team Composition:

- Frequent player changes may disrupt team synergy, making it challenging to maintain consistent performance.

This comprehensive analysis should provide insights into RCB's strengths, weaknesses, and patterns that could inform strategies to enhance performance and title prospects in future seasons.

## 10. How would you approach this problem, if the objective and subjective questions weren't given?

In the absence of objective or subjective prompts, a structured, data-driven methodology is essential to guide auction planning and team optimization. The following framework outlines a comprehensive approach to analyzing historical performance, identifying strategic gaps, and informing future decisions.

### 1. Database Exploration

- Begin with a full audit of the database to understand its schema, relationships, and available data points.
- Focus on historical player statistics, match outcomes, and auction records to uncover performance trends.
- Pay special attention to past auction strategies—evaluate which player acquisitions led to sustained impact and how well they aligned with team goals.

### 2. Strategy Evaluation

- Analyze previous auction outcomes to identify patterns that contributed to improved team performance.
- Adapt successful strategies to current needs, such as filling role-specific gaps or addressing tactical weaknesses.
- Define clear objectives for the upcoming auction—whether it's enhancing team balance, acquiring high-impact specialists, or aligning selections with the team's playing style.

### 3. Performance Breakdown

- Examine match-level data to identify key factors behind wins and losses.
- Assess toss decisions and their influence on outcomes:
  - Calculate total tosses won.
  - Categorize results into Toss Win–Match Loss (TWML) and Toss Loss–Match Win (TLMW).
  - Evaluate whether toss choices correlate with match success or failure.

### 4. Batting Dynamics

- Compare team performance when batting first vs. chasing.
- Identify strengths and vulnerabilities in each scenario to refine toss-based decision-making.
- Use insights to optimize batting order and role assignments based on match context.

### 5. Venue-Based Analysis

- Compile detailed home vs. away performance metrics, including win percentages and margin trends.
- Analyze home venue characteristics—pitch type, weather patterns, and historical success rates—to quantify home-ground advantage.
- Contrast with away performance to assess adaptability and inform venue-specific strategies.

### 6. Opponent Profiling

- Review win/loss records against all opponents to detect recurring patterns.
- Highlight players who consistently perform well against specific teams—these insights can guide retention and targeting.
- Identify teams with poor historical records against RCB and leverage favorable matchups during planning.

### 7. Data Integration & Player Profiling

- Merge match results with ball-by-ball data to build a granular performance matrix.
- Calculate individual metrics such as runs scored, strike rates, wickets taken, and economy rates across match situations.
- Use this integrated dataset to identify high-impact players and inform auction decisions.
- Assemble a balanced squad capable of adapting to varied conditions, roles, and tactical demands.

## Conclusion

Without predefined questions, this holistic approach ensures that auction planning is grounded in performance data, strategic evaluation, and contextual insights. By integrating historical trends with tactical foresight, the team can build a resilient, role-balanced squad optimized for both home and away conditions.

**11. In the "Match" table, some entries in the "Opponent\_Team" column are incorrectly spelled as "Delhi\_Capitals" instead of "Delhi\_Daredevils". Write an SQL query to replace all occurrences of "Delhi\_Capitals" with "Delhi\_Daredevils".**

**Query:**

```
Select * from Team;  
select Team_Id, replace(Team_name,"Delhi Daredevils","Delhi Capitals") as  
Team_name from team;
```

**output:**

	Team_Id	Team_name
	2	Royal Challengers Bangalore
	3	Chennai Super Kings
	4	Kings XI Punjab
	5	Rajasthan Royals
	6	Delhi Capitals
	7	Mumbai Indians
	8	Deccan Chargers
	9	Kochi Tuskers Kerala
	10	Pune Warriors
	11	Sunrisers Hyderabad
	12	Rising Pune Supergiants
	13	Gujarat Lions