

IPL Data Analysis Project Report

Tool Used: Power BI / Tableau

Data Sources: matches.csv, deliveries.csv

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Date: August 2025

1. Summary

This project analyzes Indian Premier League (IPL) data—matches and deliveries—to uncover performance patterns, key success factors, and trends over seasons. Using Power BI/Tableau, we built an interactive dashboard that enables stakeholders (team managers, analysts, broadcasters, and fans) to explore:

- Top teams and players
- Impact of toss decisions and venues
- Performance evolution over time

2. Business Objectives

- **Identify top performers** (teams, batsmen, bowlers, fielders)
- **Determine success factors** (batting totals, bowling economy, toss decisions, venues)
- **Analyze conditions** (season matches, stadiums)
- **Detect trends** across seasons (run rates, wicket patterns)

3. Data Description

3.1 Matches Dataset

• Match Id, year, city, date, teams, toss_winner, toss decision, result, winner, margin(won by wicket / runs), venue, player_of_match, umpires

3.2 Deliveries Dataset

• Match_id, inning, batting and bowling teams, over, ball, batsman/non_striker, bowler, runs (batsman/extra/total), dismissal info, fielder

4. Data Cleaning & Preparation

1. **Schema Validation:** Ensured match and delivery IDs align;
2. **Missing Values:** Handled missing values in the list.
3. **Data Consistency:**

- Standardized team and player name spellings.
 - Removed unwanted column.
4. **Derived Metrics:**
- Created calculated measures (fours, sixes, toss wins, match wins, best winning team etc) in both data sets.
 - Created dimension tables for teams, venue etc
 - Created calculated columns required for the new tables.

5. Methodology & Tools

- **ETL & Modeling:** Power BI's Power Query
- **Data Model:** Star schema with fact table (Deliveries) and dimension tables (Players, Teams, Venues, Matches)
- **Visualization:**
- **Power BI:** DAX measures for roll-ups, slicers, KPI s, charts.

6. Analysis & Key Visualizations

6.1 Top Teams & Players

- **Most Successful Teams:** as cards in dashboard and tables in analysis page
- Team with highest scores and wins
- Team with highest success rate
- Team won by wickets greater than 7 as best bowling team
- Stats of successful team
- Most boundaries and sixes by team
- **Player Performers:**
- Batsmen: Top 10 by total runs
- Bowlers: Top 10 by total wickets
- Bowlers with no wickets
- Stats of top bowlers
- Boundaries and sixes by players.
- Players with most player of match award
- Bowlers who given most wide runs.
- Players with most duck.

6.2 Success Factors

- **Toss Decision:**
- Pie charts: toss decision distribution (bat vs. field).
- Side-by-side bar: win percentage when batting first vs. bowling first.

- Toss decision by team

6.3 Venue & Environmental Effects

- **Venue Performance:**
- Table: team win rate by stadium.
- Matches by city
- Best venue by team wins.
- Venue with most matches.

6.4 Fielding & Extras

- **Top Fielders:**
- Table of total catches and run-outs by player.
- Highlighting fielders with highest catches per match.
- **Extra runs:** by bowling team for more grooming.

6.5 Trends Over Time

- **Seasonal Trends:**
- Line chart: match by season.
- Wins by season.
- Seasonal win factors.
- Table: distribution of team scores each year.

7. Insights

1. Teams winning the toss and choosing to field have a slightly higher win rate.
2. Certain venues (e.g., Wankhede, Chinnaswamy) favor high-scoring matches—ideal for aggressive batting lineups.
3. Players with consistent boundary-hitting ability (e.g., top 5 six-hitters) show strong correlation with match-winning performances.
4. Bowlers with high dot-ball percentages contribute significantly to match control, even if wicket counts are low.
5. Mumbai Indians has most wins and hit boundaries also given most extra runs while bowling (needed training).
6. Royal Challengers Bangalore hit most sixes.
7. Chennai SuperKings has highest success rate of 60%.
8. Kolkata Knight Riders is the best bowling team.
9. Slightly more than 50% of win rate if a team wins the toss.
10. KD Karthik is the best fielder both in the case of caught as well as run out.
11. Harbhajan Singh got most wickets and ghilchrist with low wickets.

12. Gayle hits most sixes and Gambir hit most boundaries.
13. Kumar and Malinga needs more training as they given most wide runs.
14. Doshi and Ladda got most ducks.
15. Gayle as batsmen and pathan as bowler got most player of match award.
16. Mumbai hosted most matches.
17. Analysed best venue for each team.
18. Best season for matches are summer season.
19. May and April got most matches.
20. Win by wickets is greater than win by runs.
21. It rare to have tie and only 3 matches got cancelled.

8. Visualization

Team analysis:

Toss winners and match winners after toss wins

toss_winner	Toss Wins	Toss Win & Match Win
Chennai Super Kings	66	42
Deccan Chargers	43	19
Delhi Daredevils	72	33
Gujarat Lions	15	10
Kings XI Punjab	68	28
Kochi Tuskers Kerala	8	4
Kolkata Knight Riders	78	44
Mumbai Indians	85	48
Pune Warriors	20	3
Rajasthan Royals	63	34
Rising Pune Supergiants	13	8
Royal Challengers Bangalore	70	35
Sunrisers Hyderabad	35	17
Total	636	325

Total winning by team

Team	Total wins
Mumbai Indians	92
Chennai Super Kings	79
Kolkata Knight Riders	77
Royal Challengers Bangalore	73
Kings XI Punjab	70
Rajasthan Royals	63
Delhi Daredevils	62
Sunrisers Hyderabad	42
Deccan Chargers	29
Rising Pune Supergiants	15
Gujarat Lions	13
Pune Warriors	12
Kochi Tuskers Kerala	6
Total	633

4 & 6 by team

team	four	sixes
Royal Challengers Bangalore	1978	935
Mumbai Indians	2145	876
Kings XI Punjab	2083	762
Chennai Super Kings	1770	742
Delhi Daredevils	1970	686
Kolkata Knight Riders	1978	659
Rajasthan Royals	1630	538
Deccan Chargers	957	400
Sunrisers Hyderabad	999	364
Pune Warriors	525	196
Rising Pune Supergiants	368	157
Gujarat Lions	460	155
Kochi Tuskers Kerala	170	53
Total	17033	6523

Toss decision by team

Team	toss_decision	Proportion
Chennai Super Kings	bat	44
Chennai Super Kings	field	22
Deccan Chargers	bat	24
Deccan Chargers	field	19
Delhi Daredevils	bat	26
Delhi Daredevils	field	46
Gujarat Lions	bat	1
Gujarat Lions	field	14
Kings XI Punjab	bat	25
Kings XI Punjab	field	43
Kochi Tuskers Kerala	bat	3
Kochi Tuskers Kerala	field	5
Kolkata Knight Riders	bat	30
Kolkata Knight Riders	field	48
Mumbai Indians	bat	40
Mumbai Indians	field	45
Pune Warriors	bat	11
Pune Warriors	field	9
Rajasthan Royals	bat	28
Rajasthan Royals	field	35
Rising Pune Supergiants	bat	3
Rising Pune Supergiants	field	10
Royal Challengers Bangalore	bat	20
Royal Challengers Bangalore	field	50
Sunrisers Hyderabad	bat	18
Sunrisers Hyderabad	field	17
Total		636

Best bowling team

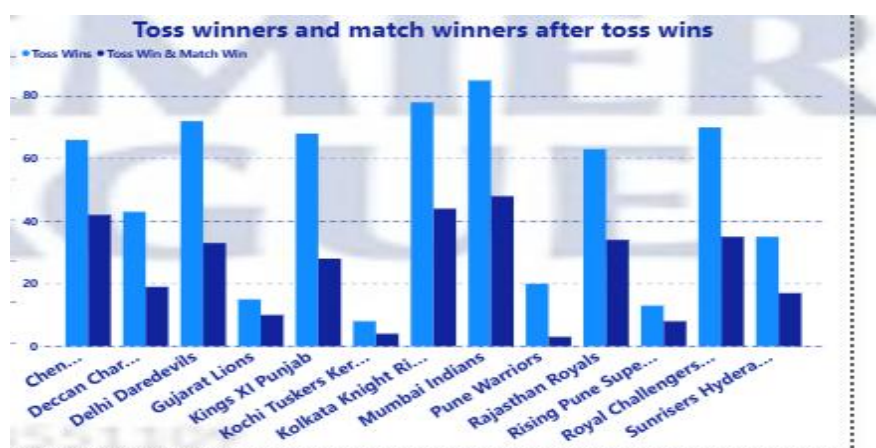
winner	Wicket >= 7 (Count)
Kolkata Knight Riders	24
Royal Challengers Bangalore	22
Delhi Daredevils	20
Mumbai Indians	18
Rajasthan Royals	17
Chennai Super Kings	16
Kings XI Punjab	15
Sunrisers Hyderabad	10
Deccan Chargers	4
Kochi Tuskers Kerala	4
Rising Pune Supergiants	4
Gujarat Lions	3
Pune Warriors	3
Total	160

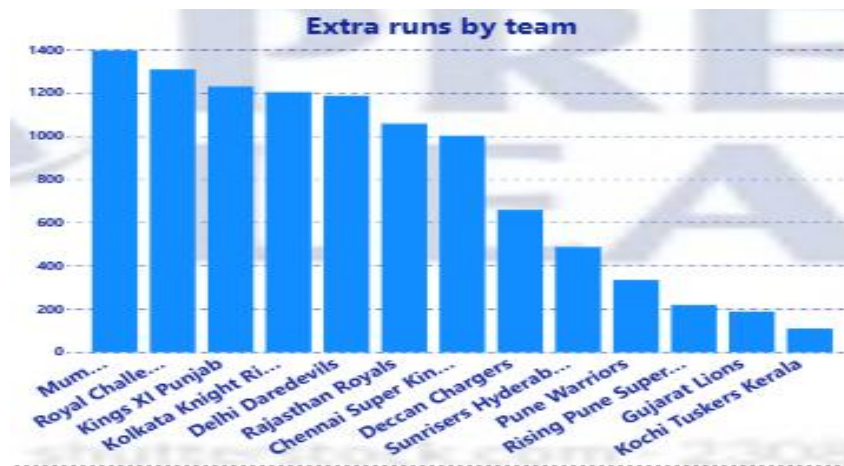
Stats of successful teams

Team	Total matches	Total wins	success rate
Chennai Super Kings	131	79	60.31%
Mumbai Indians	157	92	58.60%
Sunrisers Hyderabad	76	42	55.26%
Rajasthan Royals	118	63	53.39%
Kolkata Knight Riders	148	77	52.03%
Rising Pune Supergiants	60	30	50.00%
Royal Challengers Bangalore	152	73	48.03%
Kings XI Punjab	148	70	47.30%
Gujarat Lions	30	13	43.33%
Kochi Tuskers Kerala	14	6	42.86%
Delhi Daredevils	147	62	42.18%
Deccan Chargers	75	29	38.67%
Pune Warriors	46	12	26.09%
Total	1302	648	

4 & 6 by team

team	four	sixes
Mumbai Indians	2145	876
Kings XI Punjab	2083	762
Kolkata Knight Riders	1978	659
Royal Challengers Bangalore	1978	935
Delhi Daredevils	1970	686
Chennai Super Kings	1770	742
Rajasthan Royals	1630	538
Sunrisers Hyderabad	999	364
Deccan Chargers	957	400
Pune Warriors	525	196
Gujarat Lions	460	155
Rising Pune Supergiants	368	157
Kochi Tuskers Kerala	170	53
Total	17033	6523





Player analysis:

Top fielders by catch and run out

fielder	dismissal_kind	Count of dismissal_kind
AB de Villiers	caught	81
AB de Villiers	run out	13
KD Karthik	caught	88
KD Karthik	run out	13
MS Dhoni	caught	76
MS Dhoni	run out	20
RV Uthappa	caught	75
RV Uthappa	run out	8
SK Raina	caught	83
SK Raina	run out	13
Total		470

Bowlers with most wickets

bowler	Total wickets
Harbhajan Singh	2989
A Mishra	2703
SL Malinga	2694
P Kumar	2637
PP Chawla	2594
R Ashwin	2359
Z Khan	2276
R Vinay Kumar	2161
DW Steyn	2159
IK Pathan	2113
Total	24685

Top fielders by run out

fielder

AB de Villiers
 KD Karthik
 MK Pandey
 MS Dhoni
 RA Jadeja
 SK Raina
 V Kohli

Top fielders by catch

fielder

AB de Villiers
 KD Karthik
 MS Dhoni
 RV Uthappa
 SK Raina

Bowlers with nearly zero wickets

bowler	Total wickets
AC Gilchrist	1
SPD Smith	2
Total	3

Stats of top bowlers

bowler	Team	Total overs played	Total wickets	Total balls	Total match count
A Mishra	Sunrisers Hyderabad	7217	606	2149	27
P Kumar	Sunrisers Hyderabad	2383	230	858	12
P Kumar	Royal Challengers Bangalore	7717	875	3198	38
Harbhajan Singh	Mumbai Indians	29271	2989	10708	134
P Kumar	Mumbai Indians	451	73	259	3
SL Malinga	Mumbai Indians	29741	2694	9881	110
PP Chawla	Kolkata Knight Riders	9129	788	2783	41
P Kumar	Kings XI Punjab	6814	1032	3752	44
PP Chawla	Kings XI Punjab	20455	1806	6385	87
P Kumar	Gujarat Lions	2794	427	1547	22
A Mishra	Delhi Daredevils	16481	1484	5350	71
A Mishra	Deccan Chargers	7510	613	2180	28
Total		139963	13617	49050	397

Most wide runs by bowler

Player	Total wide_runs
P Kumar	144
SL Malinga	143
DW Steyn	105
DJ Bravo	93
B Kumar	90
SR Watson	90
UT Yadav	90
RP Singh	89
Z Khan	89
R Ashwin	88
Total	1021

4 & 6 by player

batsman	four	sixes
CH Gayle	297	266
SK Raina	402	174
RG Sharma	354	173
DA Warner	401	160
V Kohli	384	160
AB de Villiers	287	158
MS Dhoni	251	156
YK Pathan	240	149
KA Pollard	158	148
Yuvraj Singh	205	141
RV Uthappa	377	125
BB McCullum	277	124
SR Watson	258	122
Total	17033	6523

Title player of match

Player	Player of match
CH Gayle	18
YK Pathan	16
AB de Villiers	15
DA Warner	15
RG Sharma	14
SK Raina	14
G Gambhir	13
MS Dhoni	13
AM Rahane	12
MEK Hussey	12
Total	142

4 & 6 by player

batsman	four	sixes
G Gambhir	484	58
SK Raina	402	174
DA Warner	401	160
S Dhawan	401	71
V Kohli	384	160
RV Uthappa	377	125
RG Sharma	354	173
V Sehwag	334	106
AM Rahane	320	60
CH Gayle	297	266
PA Patel	297	35
SR Tendulkar	296	29
AB de Villiers	287	158
Total	17033	6523

Players with duck

batsman	Duck (count)
ND Doshi	13
S Ladda	10
Abdur Razzak	2
IC Pandey	2
L Alish	2
RR Bhatkal	2
C Nanda	1
M Ashwin	1
S Kaushik	1
Sunny Gupta	1
U Kaul	1
V Pratap Singh	1
YA Abdulla	1

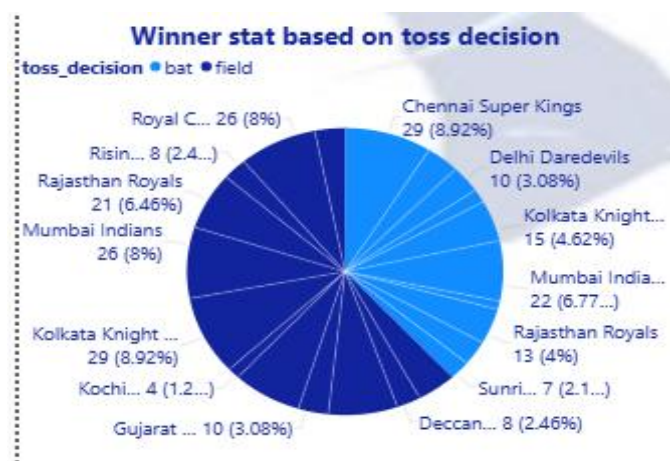
Toss decision:

Toss decision proportion

toss_decision	Proportion
bat	273
field	363
Total	636

Winners based on toss decision

toss_winner	Toss Wins	toss_decision	Match Win
Chennai Super Kings	44	bat	29
Chennai Super Kings	22	field	13
Deccan Chargers	24	bat	11
Deccan Chargers	19	field	8
Delhi Daredevils	26	bat	10
Delhi Daredevils	46	field	23
Gujarat Lions	1	bat	
Gujarat Lions	14	field	10
Kings XI Punjab	25	bat	5
Kings XI Punjab	43	field	23
Kochi Tuskers Kerala	3	bat	
Kochi Tuskers Kerala	5	field	4
Kolkata Knight Riders	30	bat	15
Kolkata Knight Riders	48	field	29
Mumbai Indians	40	bat	22
Mumbai Indians	45	field	26
Pune Warriors	11	bat	3
Pune Warriors	9	field	
Rajasthan Royals	28	bat	13
Rajasthan Royals	35	field	21
Rising Pune Supergiants	3	bat	
Rising Pune Supergiants	10	field	8
Royal Challengers Bangalore	20	bat	9
Royal Challengers Bangalore	50	field	26
Sunrisers Hyderabad	18	bat	7
Sunrisers Hyderabad	17	field	10
Total	636		325



Venue analysis:

Wins by team by venue

Team	venue	teams wins
Kolkata Knight Riders	Eden Gardens	37
Mumbai Indians	Wankhede Stadium	34
Chennai Super Kings	MA Chidambaram Stadium, Chepauk	33
Royal Challengers Bangalore	M Chinnaswamy Stadium	30
Rajasthan Royals	Sawai Mansingh Stadium	24
Delhi Daredevils	Feroz Shah Kotla	23
Sunrisers Hyderabad	Rajiv Gandhi International Stadium, Uppal	20
Kings XI Punjab	Punjab Cricket Association Stadium, Mohali	18
Mumbai Indians	Eden Gardens	9
Mumbai Indians	M Chinnaswamy Stadium	8
Rajasthan Royals	Sardar Patel Stadium, Motera	7

Matches by city

city	Total matches
Mumbai	85
Bangalore	66
Kolkata	61
Delhi	60
Hyderabad	49
Chennai	48
Chandigarh	46
Jaipur	33
Pune	32
Durban	15
Ahmedabad	12
Centurion	12
Visakhapatnam	11
Rajkot	10
Dharamsala	9
Johannesburg	8
	7
Abu Dhabi	7
Cape Town	7
Cuttack	7
Port Elizabeth	7
Ranchi	7
Raipur	6
Sharjah	6
Indore	5
Kochi	5
Kanpur	4
East London	3
Kimberley	3
Nagpur	3
Bloemfontein	2
Total	636

Seasonal analysis:

Seasonal wins factors

Month	win by runs count	win by wickets count
March	16	12
April	129	161
May	142	164
June		2
Total	287	339

Seasonal match

Month	Count of id
March	29
April	297
May	308
June	2
Total	636

Match result

result	Count of id
no result	3
normal	626
tie	7
Total	636



9. Dashboard Features

- **Interactive Filters:** Team, season, venue, toss decision, player role
- **Drill-Through Pages:** From summary charts to match-level and delivery-level detail
- **Dynamic Story Points:** Narrative flow capturing major findings

Top Performers

- **Highest Scorers:** Bar chart of total runs by batsman
- **Most Wickets:** Pie chart of top bowlers
- **Zero-Wicket Bowlers:** Filtered table for bowlers with no dismissals
- **Top Fielders:** Matrix of catches and run-outs by player

Match Insights

- **Toss Analysis:** Number of tosses won and match outcomes post-toss
- **Toss Decisions:** Bat vs Field decisions by team and season
- **Win Margins:** Distribution of wins by runs and wickets

- **Lucky Stadiums:** Venue-wise win count per team, ranked to find top-performing stadiums

Team Performance

- **Most Successful Teams:** Total wins and win percentage
- **Boundary Analysis:** Total sixes and fours by team and player
- **City Hosting Trends:** Number of matches per city over seasons
- **Seasonal Trends:** Line chart showing team performance across years

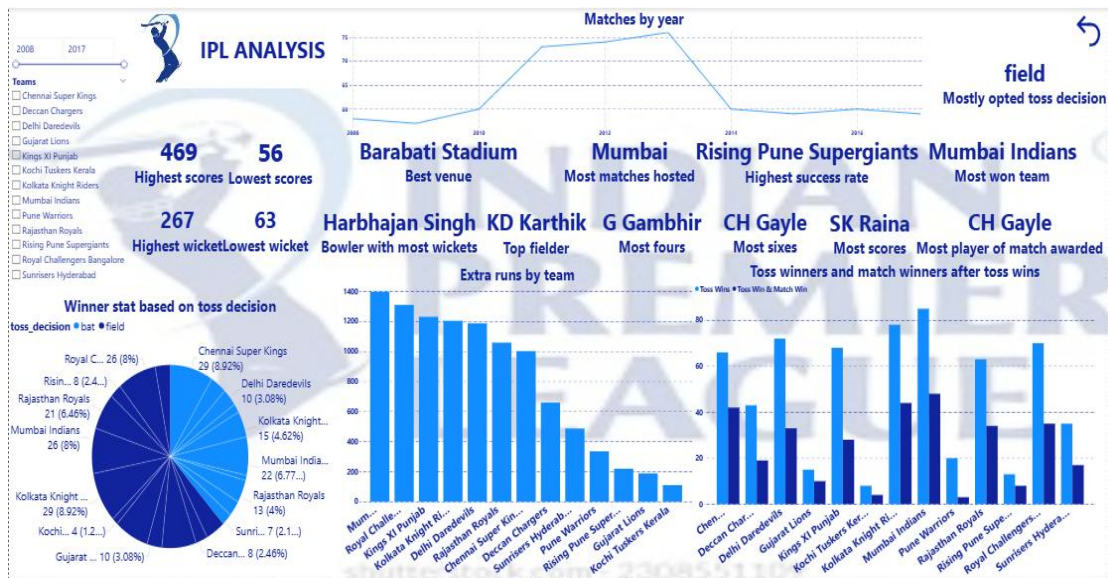


Fig. : Dashboard screenshot.

9. Conclusion

This IPL analytics dashboard delivers actionable insights into team strategies, player performance, and match conditions. By leveraging interactive visualizations in Power BI/Tableau, stakeholders can make informed decisions on squad composition, match tactics, auction strategies, and broadcasting narratives—ultimately driving competitive advantage and fan engagement.

Next Steps:

- Integrate real-time feeds for ongoing IPL seasons
- Incorporate advanced predictive models (machine learning) for match outcome forecasting
- Extend analysis to player fitness and bio-metric data for holistic performance optimization

10. Recommendations

- Use venue-specific performance data to guide team composition and strategy.
- Prioritize players with multi-season consistency during auctions.
- Leverage toss decision analytics to refine match-day tactics.
- Highlight close matches and top performers in fan engagement campaigns.

- Bat First Advantage: Teams batting first win ~57% of matches—consider chasing only under favorable conditions (e.g., dew-free venues).
- Stable Opening Partnerships: Top teams consistently post 50+ powerplay runs, correlating with a 20% higher win rate.
- Death-Over Specialists: Bowlers with economy <8 in overs 16–20 are 30% more likely to belong to title-winning squads.
- Venue Selection Strategy: Certain stadiums (e.g., Chennai) favor spin—teams should bid accordingly and adjust playing XI.
- Fielding Excellence: Teams in top four have 15% more catches/run-outs per match—invest in fielding coaches and drills.

11. Deliverables

- **Power BI Dashboard:** Interactive visuals with slicers for team, player, season, venue
- **Summary Report:** This document outlining methodology, insights, and recommendations
- **Documentation:** Assumptions, data cleaning steps, and model design notes