

# **Cricket Analytics using Python and PowerBI**

## **USER MANUAL**

Over the last decade adoption of analytics has led to significant improvement in results in all sports. In this project we want to mimic how computer analysts associated with IPL teams help them find the best fit batsman and bowler for their team. Data analysis helps IPL teams to answer the following questions: “Should they spend on a particular player or not?” or “How valuable is the player going to be for the team?” How should they judge in detail, “Which player should they buy and which one they shouldn't?”, “How much money should be spent on which player?” or “What are the values of the different players?”.

You will not believe that, but IPL teams have started hiring proper companies who are experts in such Data Analysis.

### **Problem Statement**

The owners and the management of Mumbai Indians want to identify the best possible players suitable for them for the next auction. They have hired you as an Analyst to help them identify the best IPL team for the 2022 auction. You need to analyze the IPL data from 2008 to 2020, and perform the following tasks:

1. Rank batsmen by year and overall based on ability
2. Rank bowlers by year and overall based on ability
3. Rank the most valuable player in IPL over all the years
4. Visualize this in an intuitive Power BI Dashboards
5. Find Similar Batsmen and Bowler

### **Group Members**

1. Neel Shah
2. Hardik Pithadiya
3. Divyesh Pithadiya
4. Radha Sawant

### **Team Lead**

Ashwini Kumar

### **Scrum Master**

Aditya Shah

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# How to use the Dashboard

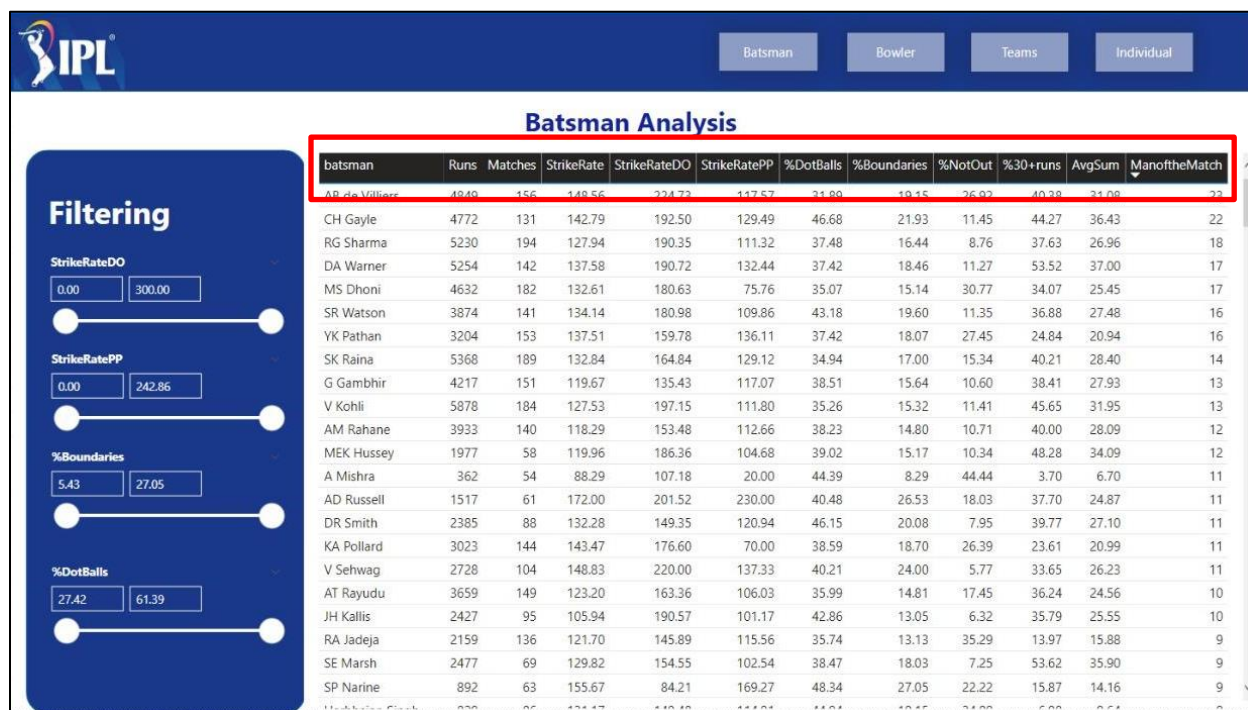
There are 4 different Tabs available on the Dashboard i.e., **Batsman**, **Bowler**, **Team** and **Individual**. All the tabs are used to filter, sort and analyze the players or teams using their respective KPIs (Key performance indicators). List of all KPIs will be seen ahead in detail along with their importance.

Step 1: Open the dashboard using this [link](#).

Step 2: Explore all the different pages available on the dashboard like Batsman, Bowler, Team as well as Individual.



Step 3: For SORTING click on the header available on the top of each table and the data will be sorted accordingly.



**Batsman Analysis**

batsman	Runs	Matches	StrikeRate	StrikeRateDO	StrikeRatePP	%DotBalls	%Boundaries	%NotOut	%30+runs	AvgSum	ManoftheMatch
AB de Villiers	4848	156	148.56	234.73	117.57	31.89	18.15	26.92	40.38	31.08	22
CH Gayle	4772	131	142.79	192.50	129.49	46.68	21.93	11.45	44.27	36.43	22
RG Sharma	5230	194	127.94	190.35	111.32	37.48	16.44	8.76	37.63	26.96	18
DA Warner	5254	142	137.58	190.72	132.44	37.42	18.46	11.27	53.52	37.00	17
MS Dhoni	4632	182	132.61	180.63	75.76	35.07	15.14	30.77	34.07	25.45	17
SR Watson	3874	141	134.14	180.98	109.86	43.18	19.60	11.35	36.88	27.48	16
YK Pathan	3204	153	137.51	159.78	136.11	37.42	18.07	27.45	24.84	20.94	16
SK Raina	5368	189	132.84	164.84	129.12	34.94	17.00	15.34	40.21	28.40	14
G Gambhir	4217	151	119.67	135.43	117.07	38.51	15.64	10.60	38.41	27.93	13
V Kohli	5878	184	127.53	197.15	111.80	35.26	15.32	11.41	45.65	31.95	13
AM Rahane	3933	140	118.29	153.48	112.66	38.23	14.80	10.71	40.00	28.09	12
MEK Hussey	1977	58	119.96	186.36	104.68	39.02	15.17	10.34	48.28	34.09	12
A Mishra	362	54	88.29	107.18	20.00	44.39	8.29	44.44	3.70	6.70	11
AD Russell	1517	61	172.00	201.52	230.00	40.48	26.53	18.03	37.70	24.87	11
DR Smith	2385	88	132.28	149.35	120.94	46.15	20.08	7.95	39.77	27.10	11
KA Pollard	3023	144	143.47	176.60	70.00	38.59	18.70	26.39	23.61	20.99	11
V Sehwag	2728	104	148.83	220.00	137.33	40.21	24.00	5.77	33.65	26.23	11
AT Rayudu	3659	149	123.20	163.36	106.03	35.99	14.81	17.45	36.24	24.56	10
JH Kallis	2427	95	105.94	190.57	101.17	42.86	13.05	6.32	35.79	25.55	10
RA Jadeja	2159	136	121.70	145.89	115.56	35.74	13.13	35.29	13.97	15.88	9
SE Marsh	2477	69	129.82	154.55	102.54	38.47	18.03	7.25	53.62	35.90	9
SP Narine	892	63	155.67	84.21	169.27	48.34	27.05	22.22	15.87	14.16	9

**Filtering**


StrikeRateDO: 0.00 to 300.00

StrikeRatePP: 0.00 to 242.86

%Boundaries: 5.43 to 27.05

%DotBalls: 27.42 to 61.39

Step 4: For FILTERING there is a slicer on the left side of page just slide them or select them to get the desired output.



Batsman
Bowler
Teams
Individual

### Batsman Analysis

#### Filtering

**StrikeRateDO**

**StrikeRatePP**

**%Boundaries**

**%DotBalls**

batsman	Runs	Matches	StrikeRate	StrikeRateDO	StrikeRatePP	%DotBalls	%Boundaries	%NotOut	%30+runs	AvgSum	ManoftheMatch
AB de Villiers	4849	156	148.56	224.73	117.57	31.89	19.15	26.92	40.38	31.08	23
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Step 5: To see the performance of each team against another team, explore the table available on the team's page. The value at particular cell is the win percentage of the team whose name is row against the team who is on the column.

team_name	Sunrisers Hyderabad	Royal Challengers Bangalore	Rajasthan Royals	Mumbai Indians	Kolkata Knight Riders	Kings XI Punjab	Delhi Capitals	Chennai Super K
Chennai Super Kings	66	64	60	40	63	60	65	
Delhi Capitals	48	40	50	42	44	42	0	
Kings XI Punjab	46	53	42	46	33	0	57	
Kolkata Knight Riders	67	53	54	22	0	66	56	
Mumbai Indians	53	62	50	0	77	53	57	
Rajasthan Royals	59	45	0	50	45	57	50	
Royal Challengers Bangalore	42	0	45	37	46	46	56	
Sunrisers Hyderabad	0	57	40	46	32	53	51	

Step 6: On the teams page you will be able to see the statistics of different teams in the IPL.

IPL

Batsman

Bowler

Teams

Individual

Teams Analysis

KPI	Value
Total matches	178.00
Homeground wins percentage	70.18
Win percentage	59.55
Chase Percentage	50.00
Defend percentage	50.00
Number of times qualified	9.00

KPI	Value
Win percentage	44.33
Total matches	194.00
Number of times qualified	5.00
homeground wins percentage	41.89
Defend percentage	39.53
Chase percentage	58.14

KPI	Value
Win percentage	46.32
Total Matches	190.00
Number of times qualified	4.00
Homeground wins percentage	53.57
Defend percentage	45.45
Chase percentage	51.14

KPI	Value
Total matches	192.00
Homeground wins percentage	58.44
Chase Percentage	57.58
Win percentage	51.56
Defend percentage	41.41
Number of times qualified	7.00

KPI	Value
Win percentage	47.74
Total matches	199.00
Number of times qualified	8.00
homeground wins percentage	50.70
Defend percentage	54.74
Chase percentage	44.21

KPI	Value
Win percentage	50.31
Total matches	161.00
Number of times qualified	4.00
homeground wins percentage	66.10
Defend percentage	34.57
Chase percentage	62.96

KPI	Value
Win percentage	59.11
Total matches	203.00
Number of times qualified	9.00
homeground wins percentage	52.48
Defend percentage	51.67
Chase percentage	46.67

KPI	Value
Win percentage	46.67
Total matches	195.00
Number of times qualified	7.00
homeground wins percentage	46.25
Defend percentage	41.76
Chase percentage	56.04

# Batsman Analysis

batsman	Runs	Matches	StrikeRate	StrikeRateDO	StrikeRatePP	%DotBalls	%Boundaries	%NotOut	%30+runs	AvgSum	ManoftheMatch
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SP Narine	892	63	155.67	84.21	169.27	48.34	27.05	22.22	15.87	14.16	9

List of all KPIs for Batsman:

1. Strike rate =  $\frac{\text{Runs Scored by a Batsman}}{\text{Total Balls}} \times 100$
2. Strike rate in power play and death over =  $\frac{\text{Runs Scored by a Batsman in powerplay or death over}}{\text{Total Balls}} \times 100$
3. Percentage of not out =  $\frac{\text{No.of times not dismissed}}{\text{No.of times played}} \times 100$
4. Percentage of dot balls =  $\frac{\text{No.of dot balls}}{\text{No.of times ball faced}} \times 100$
5. Percentage of boundaries =  $\frac{\text{No.of 6s or 4s}}{\text{No.of times ball faced}} \times 100$
6. Average runs per match =  $\frac{\text{Total no.of runs made by a Batsman}}{\text{Total no.of matches played by the batsman}}$
7. Percentage of 30+ runs scored in matches =  $\frac{\text{No.of times scored 30+ runs}}{\text{No.of times played}} \times 100$
8. Man of the match count = Count (No. of times won Man of the Match)



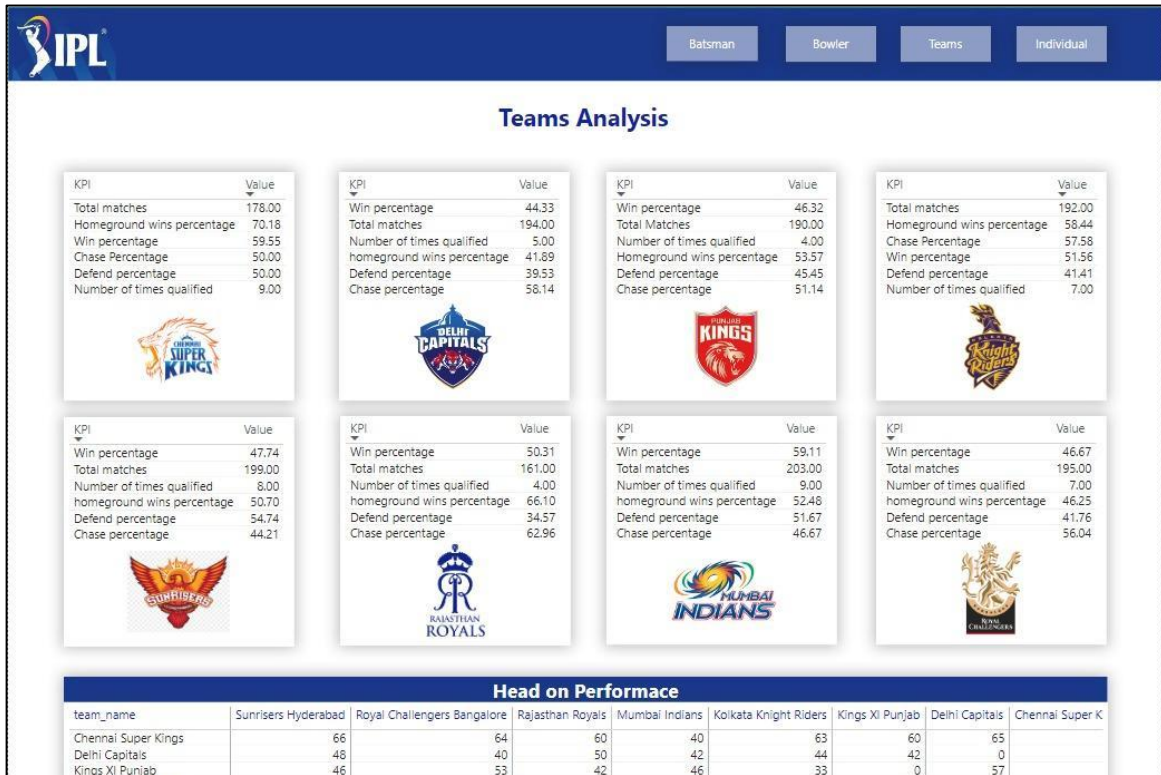
# Bowler Analysis

Bowler	Ball	Overs	Matches	Wickets	StrikeRate	Economy	AvgWickets	RunsGiven	%Boundaries	%Dots	4W	BoundariesGiven	Balls
A Chandila	232	38	12	11	21.10	6.40	0.90	245	11.60	44.40	1	27	
Rashid Khan	1451	241	62	75	19.30	6.50	1.20	1573	11.20	41.70		163	
J Yadav	263	43	14	6	43.80	6.70	0.40	290	10.60	38.80		28	
SM Pollock	274	45	13	11	24.90	6.80	0.80	307	14.20	47.40		39	
SSM Senanayake	190	31	8	9	21.10	6.80	1.10	211	11.60	38.40		22	
A Kumble	942	157	42	45	20.90	6.90	1.10	1089	11.40	39.70	3	107	
Mohammad Nabi	289	48	14	11	26.30	6.90	0.80	331	11.80	39.80	1	34	
DL Vettori	764	127	34	28	27.30	7.00	0.80	894	11.90	35.30		91	
GD McGrath	315	52	14	12	26.20	7.00	0.90	366	16.20	48.60	1	51	
IS Sodhi	179	29	8	9	19.90	7.00	1.10	204	9.50	35.80		17	
MJ Santner	126	21	6	6	21.00	7.00	1.00	147	12.70	38.90		16	
SP Narine	2741	456	119	127	21.60	7.00	1.10	3208	12.40	40.10	7	341	
M Muralitharan	1481	246	66	63	23.50	7.10	1.00	1755	11.50	40.40		170	
R Ashwin	3186	531	151	138	23.10	7.10	0.90	3756	11.30	36.60	1	361	
Sohail Tanvir	238	39	11	22	10.80	7.10	2.00	275	14.30	50.80	2	34	
Washington Sundar	645	107	35	24	26.90	7.10	0.70	758	12.10	37.20		78	
DW Steyn	2131	355	95	97	22.00	7.20	1.00	2568	15.80	47.80		337	
J Botha	680	113	34	25	27.20	7.20	0.70	818	12.40	37.40		84	
MJ Clarke	64	10	5	2	32.00	7.20	0.40	72	9.40	34.40		6	
MM Ali	258	43	17	10	25.80	7.20	0.60	309	12.80	37.60		33	
PD Collingwood	89	14	6	5	17.80	7.20	0.80	101	7.90	27.00		7	
R Sharma	918	153	44	40	23.00	7.20	0.90	1100	12.50	36.40		115	

List of all KPIs for Bowler:

1. Economy =  $\frac{\text{Total no. of Runs}}{\text{Total number of Overs Bowled (6 Balls each)}}$
2. Economy for Powerplay, Middle and Death overs =  $\frac{\text{Total no. of Runs}}{\text{Total number of Overs Bowled (6 Balls each)}}$
3. Strike Rate =  $\frac{\text{Total no. of Balls}}{\text{Total number of Wickets}}$
4. Average Wickets per match =  $\frac{\text{Total no. of Wickets}}{\text{Total number of Matches Bowled}}$
5. Percentage of Dot balls =  $\frac{\text{Total no. of Dot balls}}{\text{Total no. of balls bowled}} \times 100$
6. Percentage Boundaries =  $\frac{\text{Total no. of Boundaries}}{\text{Total no. of balls bowled}} \times 100$
7. Bowling Average =  $\frac{\text{Total no. of Runs Given}}{\text{Total number of wickets taken}}$
8. 4 Wicket Haul = Total player's times taken 4 wickets

# Team Analysis




List of all KPIs for Teams:

1. Percentage wins =  $\frac{\text{Total no.of matches won}}{\text{Total no.of matches played}} \times 100$
2. Percentage wins by chasing =  $\frac{\text{Total no.of matches won by chasing}}{\text{Total no.of matches won}} \times 100$
3. Percentage wins by defending =  $\frac{\text{Total no.of matches won by defending}}{\text{Total no.of matches won}} \times 100$
4. Percentage wins by tie =  $\frac{\text{Total no.of matches won by tie}}{\text{Total no.of matches won}} \times 100$
5. Percentage toss wins =  $\frac{\text{Total no.of toss won}}{\text{Total no.of matches played}} \times 100$
6. Percentage home wins =  $\frac{\text{Total no.of matches won at home}}{\text{Total no.of matches won}} \times 100$
7. Number of times qualified = Total no. of times qualified to the playoffs
8. Number of times toss and match winner = Total no. of both match and toss won



# Individual Analysis

## Individual Batsman Analysis



BatsmanBowlerTeamsIndividual

### Individual Batsman Analysis

SELECT BATSMAN NAME:  
A Mishra

STRIKE RATE:  
88.29

POWERPLAY STRIKE RATE:  
20.00

MAN OF THE MATCH  
11

Batting Rank:  
203

BATSMAN NAME:  
A Mishra

TOTAL RUNS:  
362

BOUNDARY PERCENTAGE  
8.29

AVERAGE RUNS PER MATCH  
6.70

Bowling Rank  
14.0

BowlerBatsman


MORE THAN 30 RUNS  
2

DEATH OVER STRIKE RATE  
107.18

TOTAL MATCHES:  
54

All Rounder Rank:  
37.0

## Individual Bowler Analysis



BatsmanBowlerTeamsIndividual

### Individual Bowler Analysis

SELECT BOWLER NAME:  
A Nehra

TOTAL RUNS GIVEN:  
2537

ECONOMY:  
8.10

POWERPLAY ECONOMY:  
7.70

Batting Rank:  
-

BOWLER NAME:  
A Nehra

DEATH OVER ECONOMY:  
9.30

BOWLING AVERAGE:  
23.90

DOT BALL PERCENTAGE:  
42.50

Bowling Rank  
20

BowlerBatsman

TOTAL WICKETS:  
106

4 WICKETS FREQUENCY:  
1

TOTAL MATCHES:  
88

All Rounder Rank:  
-

## Ranking System:

There are in total three ranking for each player

1. Batting rank:

It is calculated based on the KPIs strike rat, percentage not out, percentage boundary, percentage dot ball, Total number of matches etc.

2. Bowling rank:

It is calculated based on the KPIs Economy, Bowling average, total number of matches, total number of wickets, average wickets per match, four wickets hauled

3. All-rounder rank:

It is the average of bowling and batting rank.