T20 world cup cricket data analytics

The ICC T20 World Cup 2022, hosted by Australia, featured 20 teams from around the globe, culminating in England's championship victory. Leveraging web scraping and Python, data was collected from ESPNcricinfo using Brightdata. Through meticulous data cleaning and analysis with Pandas, top performers were identified.

A Power BI dashboard was crafted to select the best players for key positions such as openers, middle-order batsmen, finishers, all-rounders, and fast bowlers. Teams selected using this method boasted a 90% chance of winning, showcasing the power of data-driven decisions in cricket.

Web Scrapping

- For web scraping, we harnessed the capabilities of the powerful data acquisition tool, Bright Data (https://brightdata.com/). Through this platform, we seamlessly extracted data from the esteemed cricket database, ESPNcricinfo (https://www.espncricinfo.com/), ensuring a comprehensive dataset for analysis.

- Bright Data facilitated the collection of essential cricket statistics from ESPNcricinfo, employing its advanced collector to transform the raw data into structured JSON files. This method streamlined the process and enabled efficient handling of the vast volume of data required for our analysis.

The key JSON files used include:

- t20_wc_batting_summary.json
- t20_wc_bowling_summary.json
- t20_wc_match_results.json
- t20_wc_player_info.json

These files provided crucial insights into T20 World Cup matches, enabling informed decision-making.

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Python

Utilizing the Python Pandas library, we conducted rigorous data cleaning and modeling procedures. A primary key, 'match_id', was established to establish relationships across various tables.
Here's a breakdown of the technical steps involved:

1. Data Import: JSON files were imported into Google Colab, and Pandas DataFrame objects were created to handle the data effectively.

2. Primary Key Creation: The 'scorecard' column was renamed to 'match_id' to serve as the primary key, enabling seamless integration and relational mapping across datasets.

3. Creation of match_id Dictionary: A match_id dictionary was generated to facilitate connections with other tables, enhancing data coherence and accessibility.

4. Data Refinement: In the Batting, Bowling, and Player summary tables, redundant columns and symbols were meticulously removed to enhance data clarity and analysis.

5. File Saving: The processed files were saved in CSV format, ensuring compatibility and ease of use for subsequent analytical processes.

PowerBI

Power BI served as the cornerstone for visualizing and analyzing player performance based on intricate metrics.

1. **Data Integration:** Excel files were seamlessly integrated into Power BI, enabling comprehensive analysis and visualization of player statistics.

2. **Data Modeling:** The heart of the analysis lies in the robust data model, where relationships among various datasets were established to facilitate cohesive insights.

3. **Batting Metrics Creation:** Key measures were devised for batting performance, encompassing metrics such as Batting Average, Strike Rate, Boundary Percentage, Total Runs, Total Innings Batted, Total Balls Faced, Batting Position, and Total Innings Dismissed.

4. **Bowling Metrics Creation:** Similarly, crucial measures were formulated for bowling performance, including Bowling Average, Bowling Strike Rate, Wickets Taken, Dot Ball Percentage, Total Innings Bowled, Runs Conceded, Bowling Economy, Average Balls Faced by Bowler, and Total Balls Bowled.

5. **Player Categorization:** Players were categorized into five distinct categories based on their playing roles:
   1.Opener, 2. Middle Order, 3.Lower Order, 4.All-rounder, 5.Bowler

1. **Top 11 Player Selection:** Leveraging the comprehensive analysis of batting and bowling metrics, the top 11 players were meticulously selected, ensuring a balanced and competitive team composition.

Criteria for selecting players as openers :

Parameters	Description	Criteria
Batting average	Average runs scored in an inning	>30
Strike Rate	No of run scored per 100 balls	>140
Innings Batted	Total inning batted	>3
Boundary %	% of runs scored in boundaries	>50
Batting Position	Order in which the batter played	<4

PowerBI- Opener

Player Analysis | Final 11

Power Hitter | Middle Order | Lower Order | All Rounder | Bowler

Power Hitter/Openers

| Combined Performance	20.16 Batting avg	117.08 Strik Rate	50% Boundary %	13.65 Avg Ball Faced

Name	Team	Batting Style	Innings Batted	Runs	Ball Faced	Batting S/R	Batting AVG	Batting Position	Boundary %
Jos Buttler	England	Right hand Bat	6	225	156	144.23	45.00	1	61%
Alex Hales	England	Right hand Bat	6	212	144	147.22	42.40	2	64%
Rilee Rossouw	South Africa	Left hand Bat	4	141	83	169.88	35.25	3	64%
Kusal Mendis	Sri Lanka	Right hand Bat	8	223	156	142.95	31.86	2	57%
Quinton de Kock	South Africa	Left hand Bat	5	124	77	161.04	31.00	2	76%
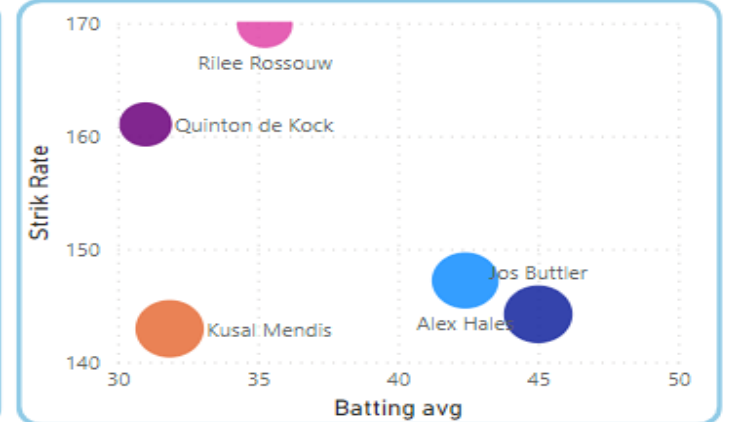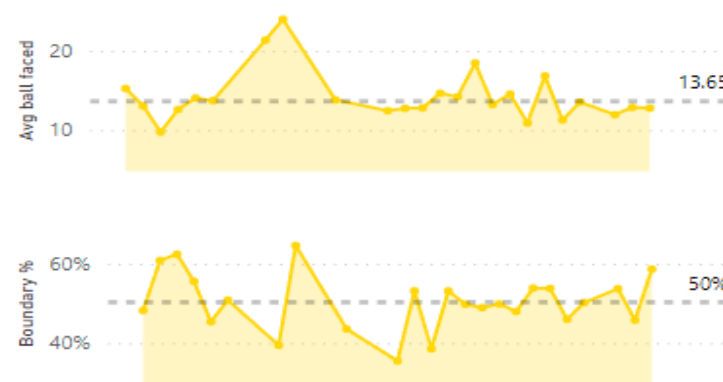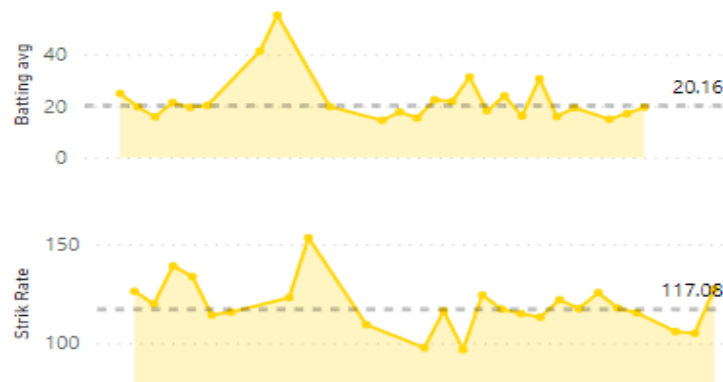
Criteria for selecting players as Middle order :

Parameters	Description	Criteria
Batting average	Average runs scored in an inning	>40
Strike Rate	No of run scored per 100 balls	>125
Innings Batted	Total inning batted	>3
Boundary %	% of runs scored in boundaries	>20
Batting Position	Order in which the batter played	>2

Middle Order

Power Hitter | **Middle Order** | Lower Order | All Rounder | Bowler

Middle Order

Combined Performance	20.16 Batting avg	117.08 Strik Rate	50% Boundary %	13.65 Avg Ball Faced

Name	Team	Batting Style	Innings Batted	Runs	Ball Faced	Batting S/R	Batting Avg	Batting Position	Boundary %
Virat Kohli	India	Right hand Bat	6	296	36.17	136.41	98.67	3	50%
Suryakumar Yadav	India	Right hand Bat	6	239	21.00	189.68	59.75	4	66%
Lorcan Tucker	Ireland	Right hand Bat	7	204	23.29	125.15	40.80	3	49%
Glenn Phillips	New Zealand	Right hand Bat	5	201	25.40	158.27	40.20	4	62%
Daryl Mitchell	New Zealand	Right hand Bat	4	109	21.25	128.24	54.50	6	24%
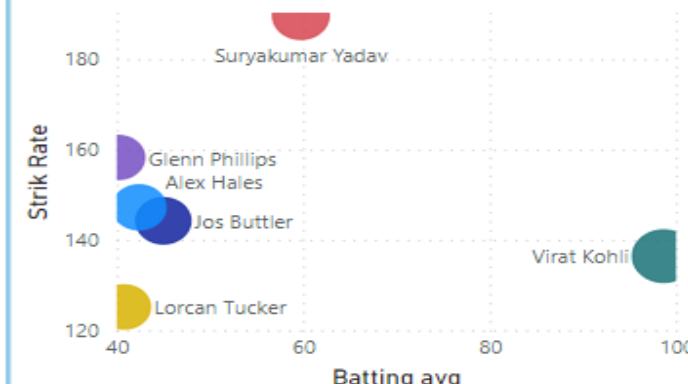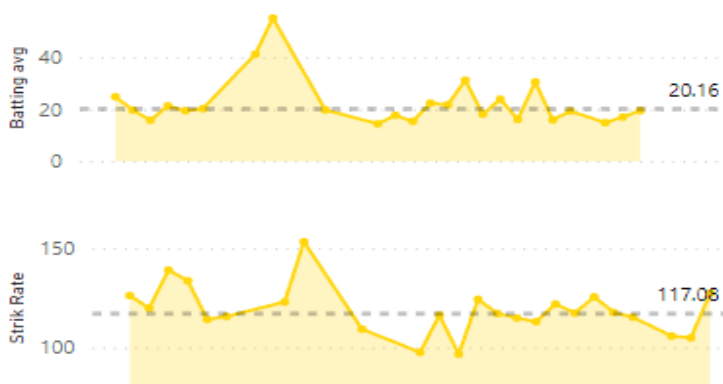
Criteria for selecting players as Lower order :

Parameters	Description	Criteria
Batting average	Average runs scored in an inning	>25
Strike Rate	No of run scored per 100 balls	>130
Innings Batted	Total inning batted	>3
Avg. Ball Faced	Average balls faced by the batter in an innings	>12
Innings Bowled	Total innings bowled by the player	>1
Batting Position	Order in which the batter played	>4

Lower Order

Player Analysis	Final 11		Power Hitter	Middle Order	Lower Order	All Rounder	Bowler

Lower Order

Combined Performance	20.16 Batting avg	117.08 Strik Rate	18.43 Bowling S/R	7.32 Bowling Eco

Name	Team	Batting Style	Bowling Style	Innings Batted	Runs	Ball Faced	Strik Rate	Batting Avg	Batting Position	Boundary %	Wickets	Bowling Economy	Bowling S/R
Sikandar Raza	Zimbabwe	Right hand Bat	Right arm Offbreak	8	219	148	147.97	27.38	5	59%	10	6.50	14.40
Curtis Campher	Ireland	Right hand Bat	Right arm Medium fast	6	126	77	163.64	25.20	6	48%	2	9.25	24.00
Glenn Maxwell	Australia	Right hand Bat	Right arm Offbreak	4	118	73	161.64	39.33	5	68%	3	6.00	6.33
Marcus Stoinis	Australia	Right hand Bat	Right arm Medium	4	126	78	161.54	42.00	5	65%	1	9.67	54.00

Batting avg — 20.16

Avg ball faced — 13.65

Batting S/R — 117.08

Bowling S/R — 18.43

Curtis Campher

Glenn Maxwell   Marcus Stoinis
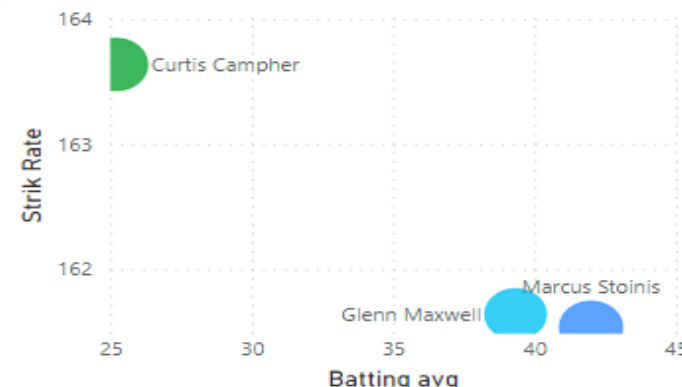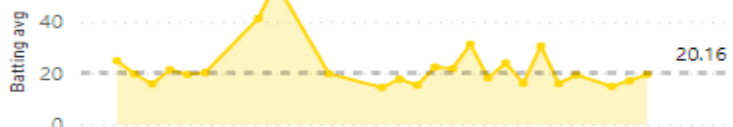
Criteria for selecting players as All Rounder :

Parameters	Description	Criteria
Batting average	Average runs scored in an inning	>15
Strike Rate	No of run scored per 100 balls	>140
Innings Batted	Total inning batted	>2
Avg. Ball Faced	Average balls faced by the batter in an innings	>12
Innings Bowled	Total innings bowled by the player	>2
Batting Position	Order in which the batter played	>4
Bowling Economy	Average runs allowed per over	<7
Bowling Strike Rate	Average no. of balls required to take a wicket	<20

All Rounder

Player Analysis | **Final 11**

Power Hitter | **Middle Order** | **Lower Order** | **All Rounder** | **Bowler**

All Rounder

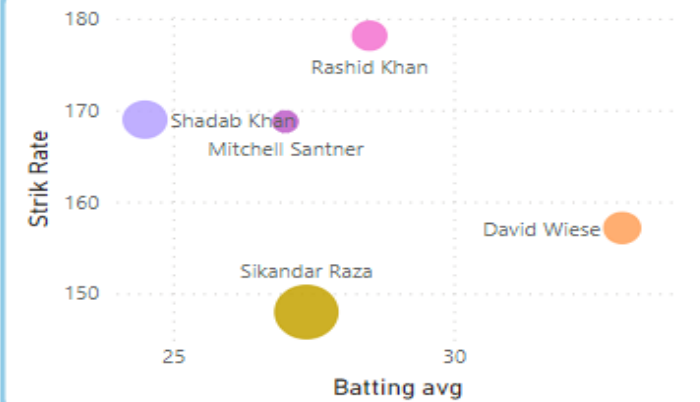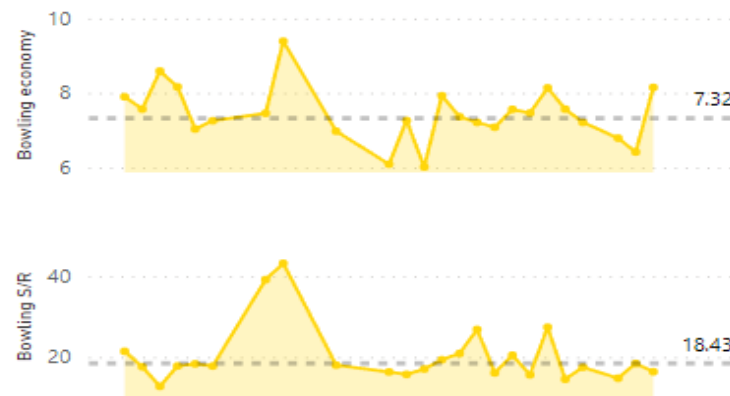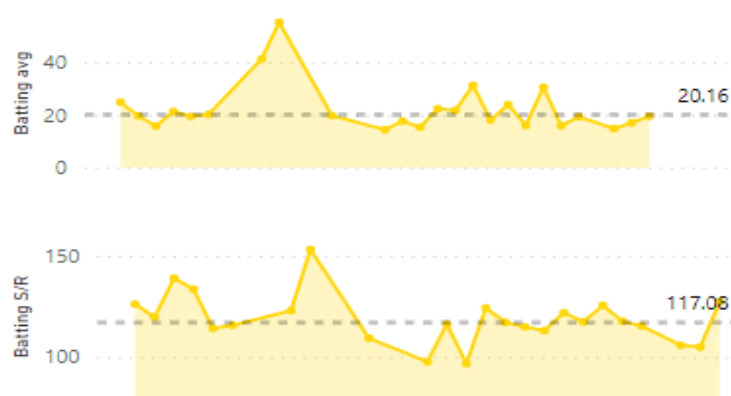| Combined Performance	20.16	117.08	18.43	7.32
	Batting avg	Batting S/R	Bowling S/R	Bowling Eco

Name	Team	Batting Style	Bowling Style	Innings Batted	Runs	Innings Bowled	Batting S/R	Batting avg	Wickets	Bowling Economy	Bowling S/R	Maidens
Sikandar Raza	Zimbabwe	Right hand Bat	Right arm Offbreak	8	219	8	147.97	27.38	10	6.50	14.40	0
Shadab Khan	Pakistan	Right hand Bat	Legbreak	6	98	7	168.97	24.50	11	6.35	14.18	0
Rashid Khan	Afghanistan	Right hand Bat	Legbreak Googly	3	57	3	178.13	28.50	4	6.42	18.00	0
Mitchell Santner	New Zealand	Left hand Bat	Slow Left arm Orthodox	3	27	5	168.75	27.00	9	6.45	13.33	0

Batting avg — 20.16

Bowling economy — 7.32

Batting S/R — 117.08

Bowling S/R — 18.43

Strik Rate / Batting avg — Rashid Khan, Shadab Khan, Mitchell Santner, David Wiese, Sikandar Raza

Criteria for selecting players as Bowlers:

Parameters	Description	Criteria
Innings Bowled	Total innings bowled by the player	>4
Bowling Economy	Average runs allowed per over	<7
Bowling Strike Rate	Average no. of balls required to take a wicket	<16
Bowling Style	Bowling style of the player	Fast
Bowling Average	No. of runs allowed per wicket	<20
Dot Ball %	% of dot balls bowled	>40

Bowlers

Power Hitter | Middle Order | Lower Order | All Rounder | **Bowler**

Bowlers 🔴

Combined Performance	22.50	18.43	40.26%	7.32
	Bowling Avg	Bowling S/R	Dot ball %	Bowling Eco

Name	Team	Bowling Style	Innings Bowled	Run conceded	Wickets	Bowling Avg	Ball bowled	Bowling economy	Bowling S/R	Dot ball %
Sam Curran	England	Left arm Medium fast	6	148	13	11.38	136	6.53	10.46	48.53%
Anrich Nortje	South Africa	Right arm Fast	5	94	11	8.55	105	5.37	9.55	55.24%
Josh Little	Ireland	Left arm Fast medium	7	189	11	17.18	162	7.00	14.73	41.98%
Shaheen Shah Afridi	Pakistan	Left arm Fast	7	155	11	14.09	151	6.16	13.73	46.36%
Tim Southee	New Zealand	Right arm Medium fast	5	114	7	16.29	104	6.58	14.86	50.00%
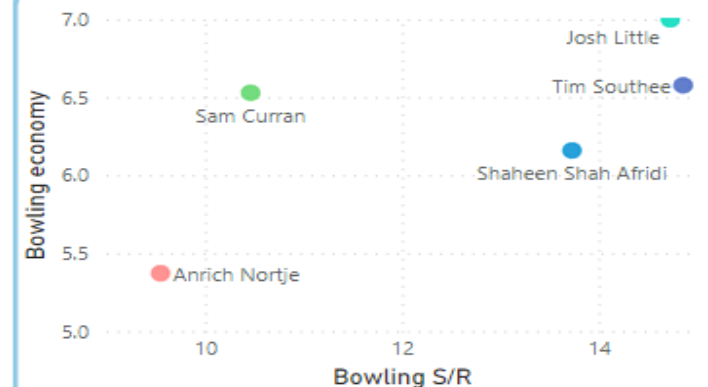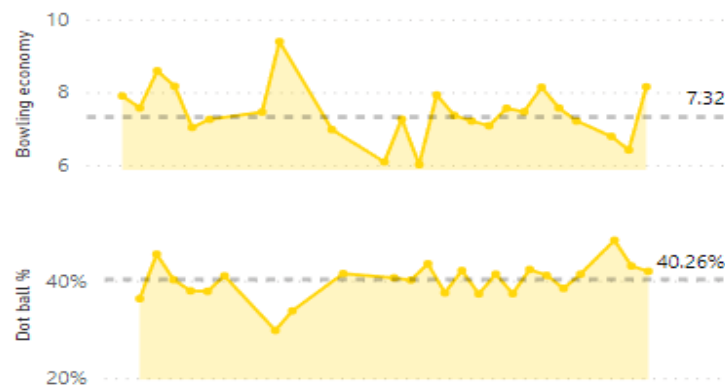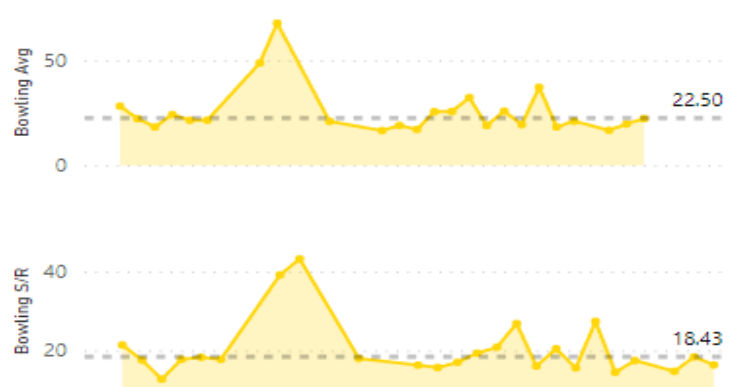
Final 11

Player Analysis | **Final 11**

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Name	Team	Playing Role	Batting Style	Batting Avg	Strik Rate	Bowling Style	Bowling economy	Bowling S/R	Bowling Avg	Batting order
Jos Buttler	England	Wicketkeeper Batter	Right hand Bat	45.00	144.23					1
Rilee Rossouw	South Africa	Top order Batter	Left hand Bat	35.25	169.88	Right arm Offbreak				2
Virat Kohli	India	Top order Batter	Right hand Bat	98.67	136.41	Right arm Medium				3
Suryakumar Yadav	India	Batter	Right hand Bat	59.75	189.68	Right arm Medium, Right arm Offbreak				4
Glenn Phillips	New Zealand	Wicketkeeper Batter	Right hand Bat	40.20	158.27	Right arm Offbreak				5
Marcus Stoinis	Australia	Batting Allrounder	Right hand Bat	42.00	161.54	Right arm Medium	9.67	54.00	87.00	6
Sikandar Raza	Zimbabwe	Batting Allrounder	Right hand Bat	27.38	147.97	Right arm Offbreak	6.50	14.40	15.60	7
Shadab Khan	Pakistan	Allrounder	Right hand Bat	24.50	168.97	Legbreak	6.35	14.18	15.00	8
Sam Curran	England	Allrounder	Left hand Bat	12.00	85.71	Left arm Medium fast	6.53	10.46	11.38	9
Shaheen Shah Afridi	Pakistan	Bowler	Left hand Bat	11.00	183.33	Left arm Fast	6.16	13.73	14.09	10
Anrich Nortje	South Africa	Bowler	Right hand Bat	5.00	83.33	Right arm Fast	5.37	9.55	8.55	11