INDIAN CRICKET TEAM 2007 T20 WC

IT ALL STARTED HERE

CONTENTS

ABSTRACT

This study examines the performance of the Indian cricket team in T20 internationals after the 2022 T20 World Cup. Using a dataset compiled from matches played between 2022 and 2024, this analysis employs the Fishers test to investigate significant associations among team performance outcomes (wins, losses, and ties). Another dataset compiled from Individual player performance variables (batting average, batting strike rate, bowling average and economy rate) by Exploratory Data Analysis(EDA) . The study aims to identify key player performance indicators that significantly impact team success in T20 cricket. The findings will provide insights for team selectors, coaches, and analysts to inform strategic decisions and enhance team performance in future T20 tournaments.

INTRODUCTION

The Indian cricket team has been a force to be reckoned with in the world of T20 cricket, with a passionate fan base and a rich history of exciting matches and memorable victories. However, with the ever-changing landscape of international cricket and the rise of new challengers, it's essential to analyze the team's performance and identify areas for improvement.

In this presentation, we'll take a closer look at the Indian cricket team's performance in T20 matches over the last two years and also the individual player performance , examining key metrics and trends to gain a deeper understanding of their strengths and weaknesses. By analyzing their performance data, we aim to provide actionable insights that can inform team strategy and enhance their chances of success in future T20 matches.

OBJECTIVES

Conducting a comprehensive Statistical Analysis of the Indian cricket team's performance in T20I matches after T20 World Cup 2022 till date.

Examining key metrics such as:-

- Win-loss record
- Impact of toss
- Impact of whether batting first or second
- Playing at Home or Away
- Individual Player Performance

To identify strengths, weaknesses, and areas for improvement, and provide data-driven insights to inform team strategy and enhance performance in future T20 matches.

DATASET

This is the dataset of all series played by Indian team throughout this time period, it is collected through espncricinfo website.

In my Dataset there are different type of variables, they are:

- Venues where India Played all T20.
- Both Teams.
- Stage Of T20.
- Team who won the toss.
- Decisions taken in each toss whether its bat or bowl.
- Score in the First Innings.
- Score in the Second Innings.
- Here I took the data by which the particular team won. (runs or wickets or tied)
- Match Winner.

This is the link of my Dataset:
https://raw.githubusercontent.com/awsprac2020/cricket-project/main/india_series.csv

This is the dataset of Individual players (Batsmen) in International matches of Indian team throughout this time period and ipl 2024 , who selected in world cup 24 also, it is collected through espncricinfo website.

In my Dataset there are different type of variables, they are:

- Name of the batsman.
- No. of runs scored.
- No. of balls faced.
- Strike rate of his batting.
- Average of his batting.
- Position of the batsman.

This is the link of International Batters Dataset:
https://raw.githubusercontent.com/awsprac2020/cricket-project/main/international_batters.csv

This is the link of Ipl Batters Dataset:
https://raw.githubusercontent.com/awsprac2020/cricket-project/main/ipl_batters.csv

This is the dataset of Individual players (Bowlers) in International matches of Indian team throughout this time period and ipl 2024 , who selected in world cup 24 also, it is collected through espncricinfo website.

In my Dataset there are different type of variables, they are:

- Name of the bowler.
- Runs given by the bowler.
- No. of wickets taken.
- No. of overs bowled.
- Economy of his bowlng.
- Average of his bowling.
- Type of the bowler.

This is the link of International bowlers Dataset:
https://raw.githubusercontent.com/awspr ac2020/cricket-project/main/International_bowlers.csv

This is the link of Ipl bowlers Dataset:
https://raw.githubusercontent.com/awspr ac2020/cricket-project/main/Ipl_Bowlers.csv

VISUALIZATION

Under VISUALIZATION, I infer the whole project, using some graphs and charts.

1) This project consists of BOXPLOT for the following:

Comparison of strike-rate between Openers, Middle Order , Lower Order batters in International and IPL matches.

Comparison of Average between Openers, Middle Order , Lower Order batters in International and IPL matches.

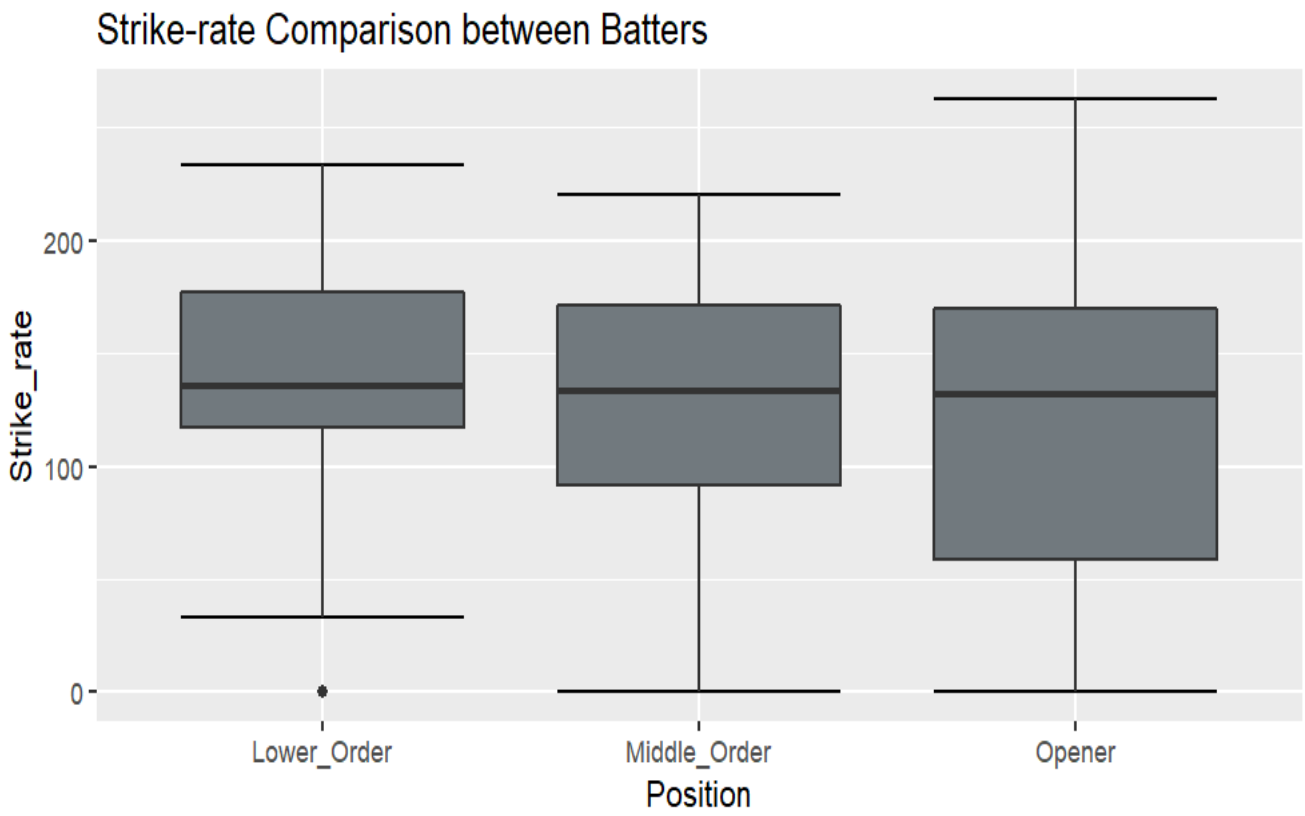
2) This project consists of KERNAL DENSITY ESTIMATION for the following:

Comparison of Economy between Pacers and Spinners in International and IPL matches.

Comparison of Average between Pacers and Spinners in International and IPL matches.

BOXPLOT

STRIKERATE OF BATSMEN IN INTERNATIONAL MATCHES



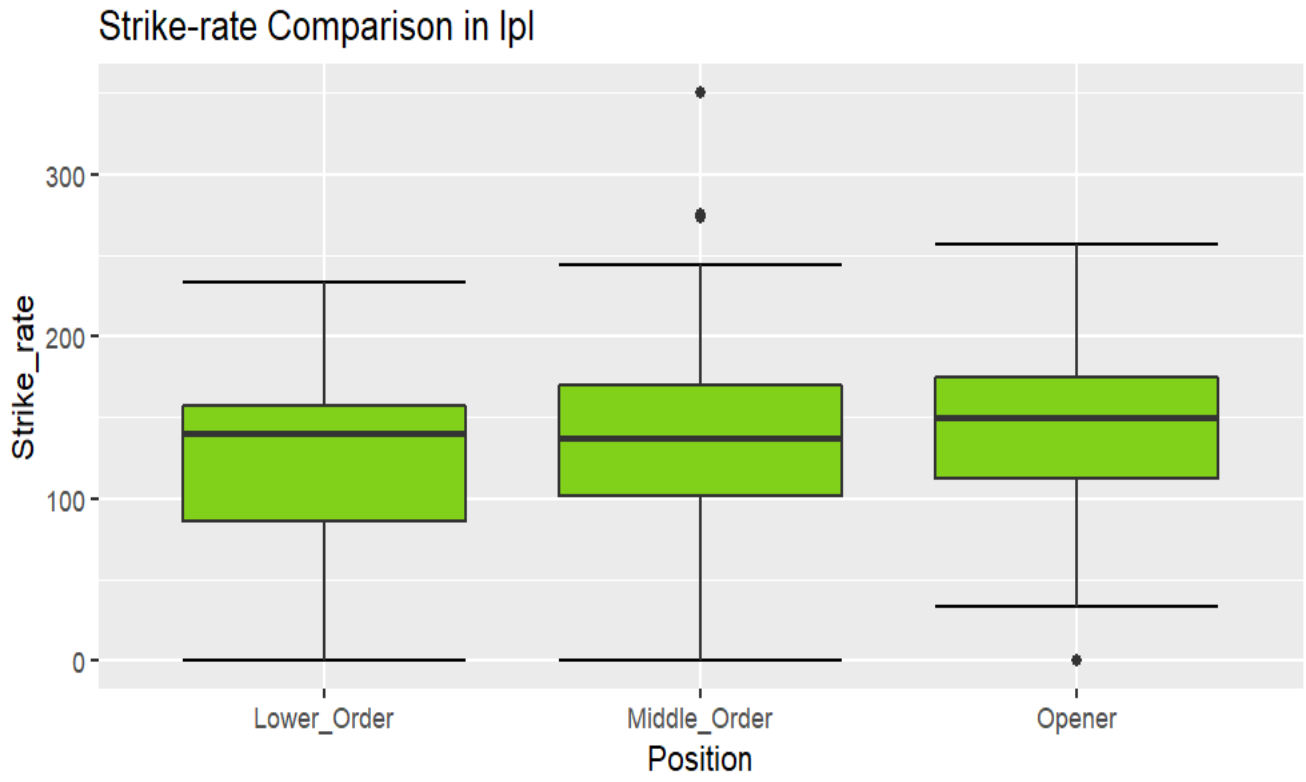
KEY FINDINGS:

Openers has balanced strike rate, indicating a strong ability to score runs quickly and slowly as well depending on situation.

Middle Order also have impressive strike rates, contributing significantly to the team's scoring.

Too good strike rates for Lower Order suggest team has enough depth for their batting lineup.

STRIKERATE OF BATSMEN IN IPL MATCHES



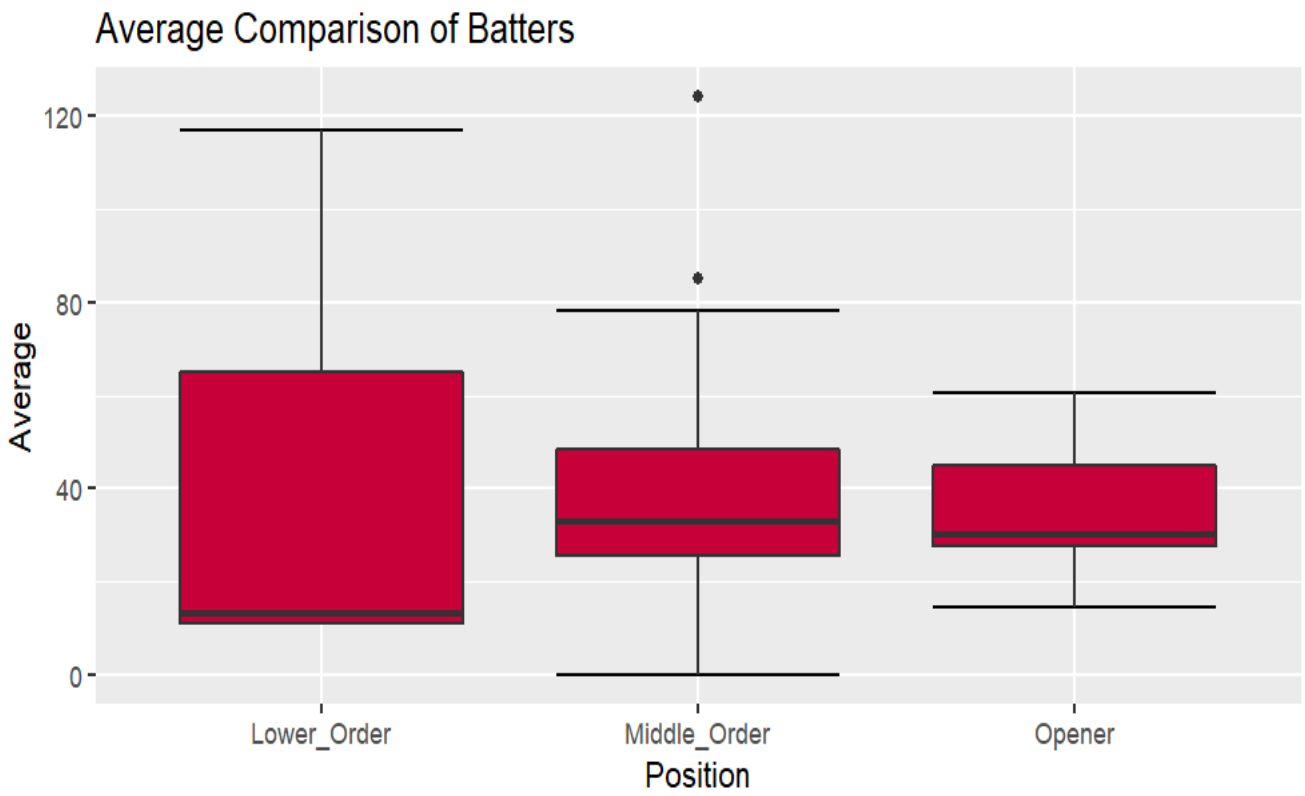
KEY FINDINGS:

Openers has better strike rate, indicating a strong ability to score runs quickly and make full use of the field restriction of first 6 overs.

Middle Order also have impressive strike rates, contributing significantly to the team's scoring.

Comparatively low strike rate for Lower Order suggest there needs to be work done more.

AVERAGE OF BATTERS IN INTERNATIONAL MATCHES



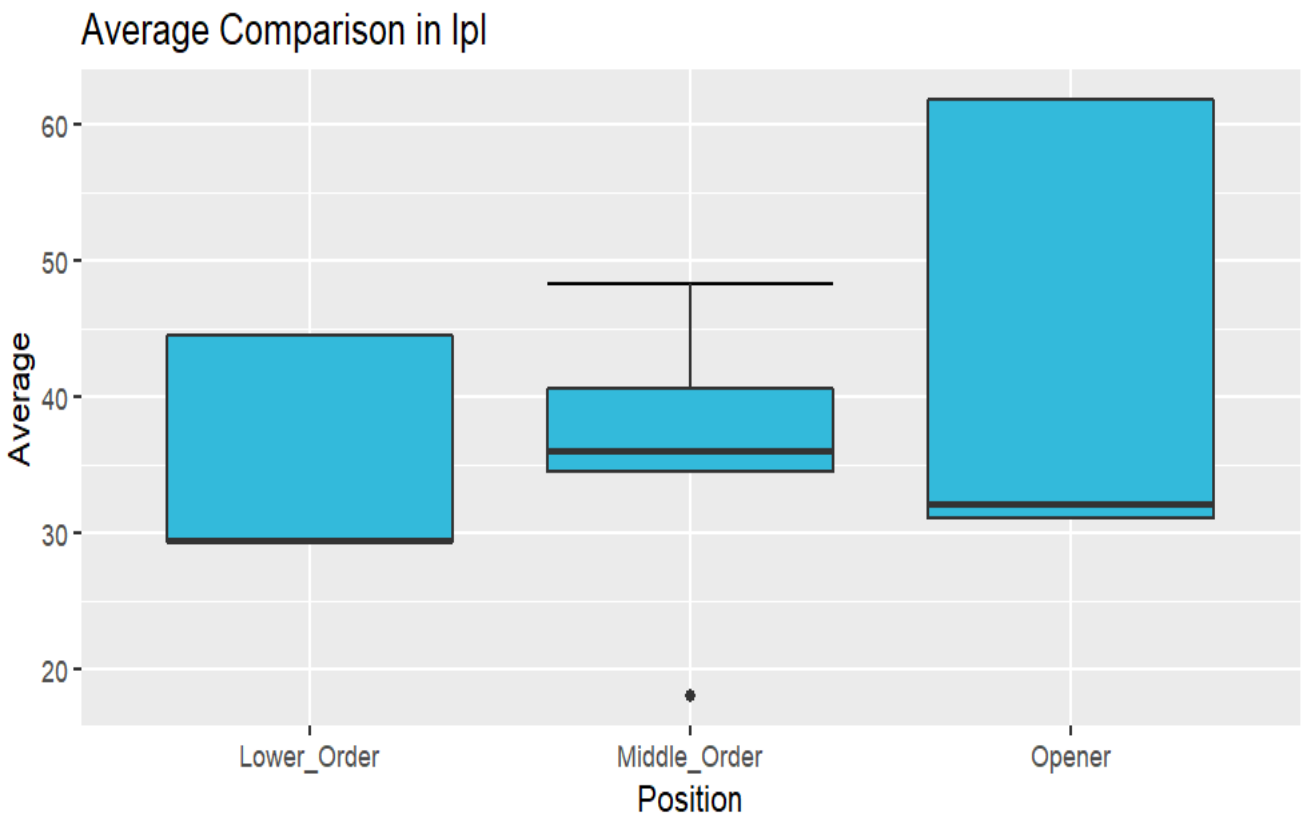
KEY FINDINGS:

Opener has the lowest average, needs more consistency there , so they can build innings perfectly and set the tone for other batters.

Middle Order's average just better than Openers, there also need improvement so they can come up in high-pressure situations.

Lower Order has much better average indicates strong performance and they can really take the game in their hand if other batsmen failed to score , this is a big positive.

AVERAGE OF BATTERS IN IPL MATCHES



KEY FINDINGS:

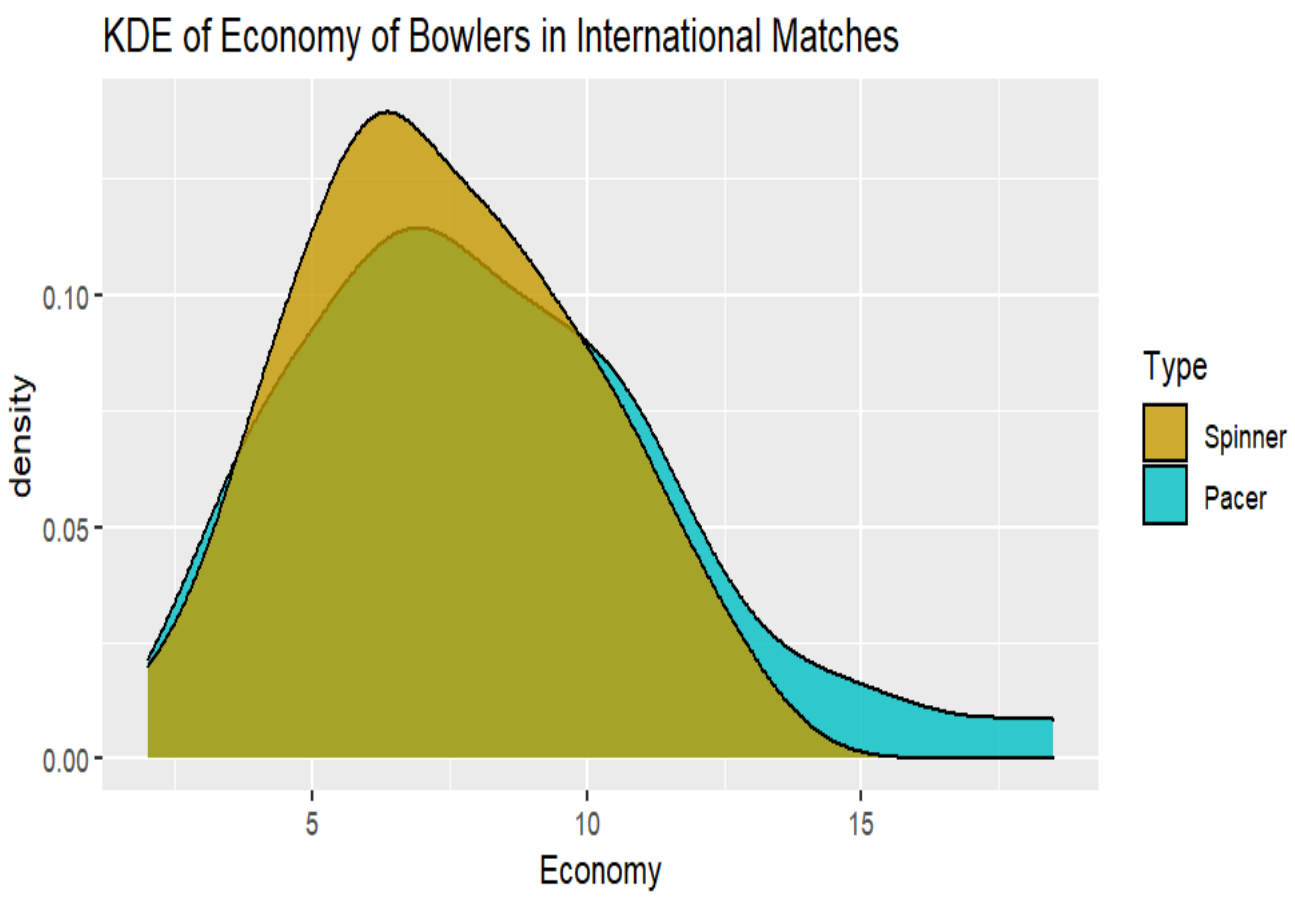
Opener has the highest average, showing exceptional consistency and ability to build innings.

Middle Order's average suggests room for growth and potential with more opportunities.

Lower Order's average is noteworthy, contributing significantly to the team's success in backend of the innings.

KERNAL DENSITY ESTIMATION

KDE OF ECONOMY OF BOWLERS IN INTERNATIONAL MATCHES



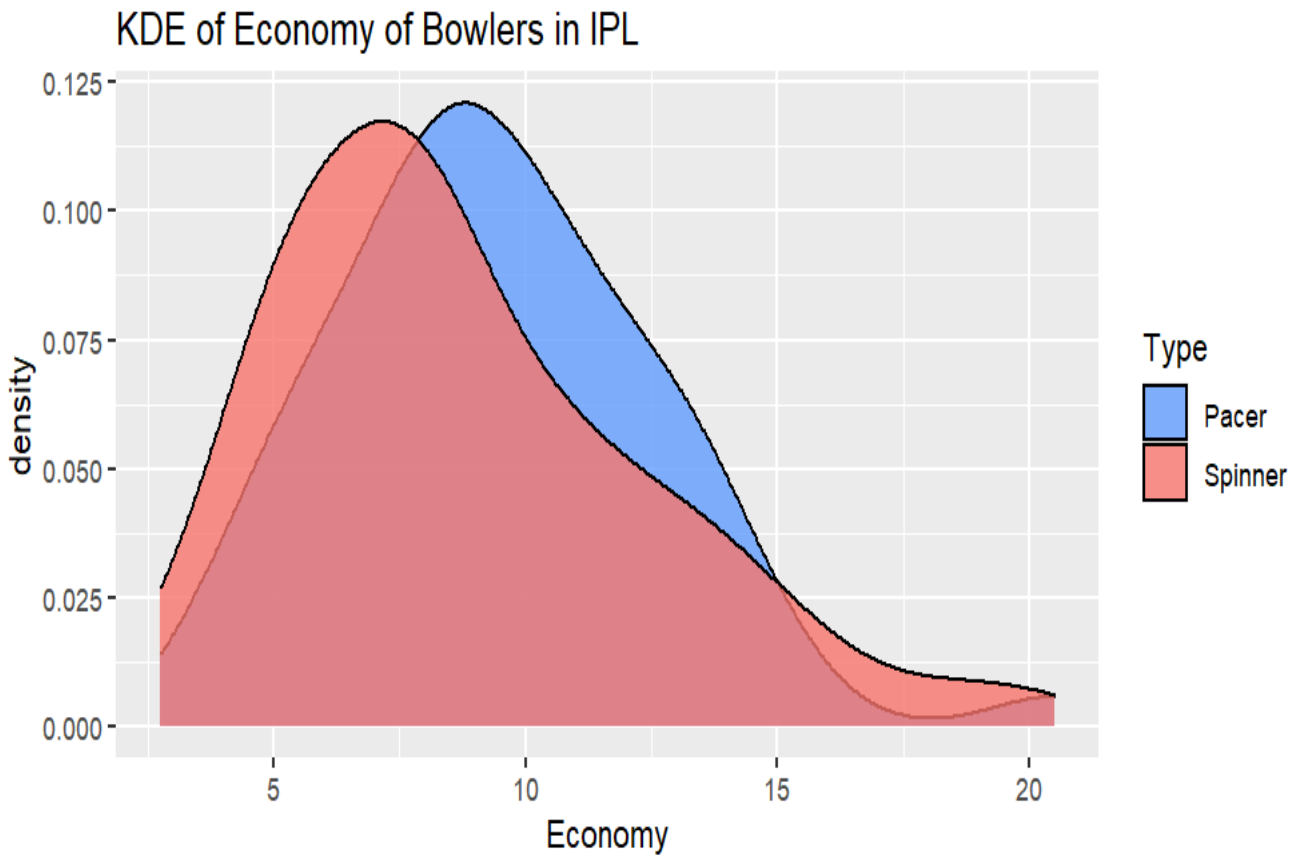
KEY FINDINGS:

Pacers and Spinners both have economy rates clustered around same range, indicating a common performance level.

A few bowlers have exceptionally low or high economy rates, suggesting extreme performances.

The plot shows that [5-10] range is the most common economy rate.

KDE OF ECONOMY OF BOWLERS IN IPL MATCHES



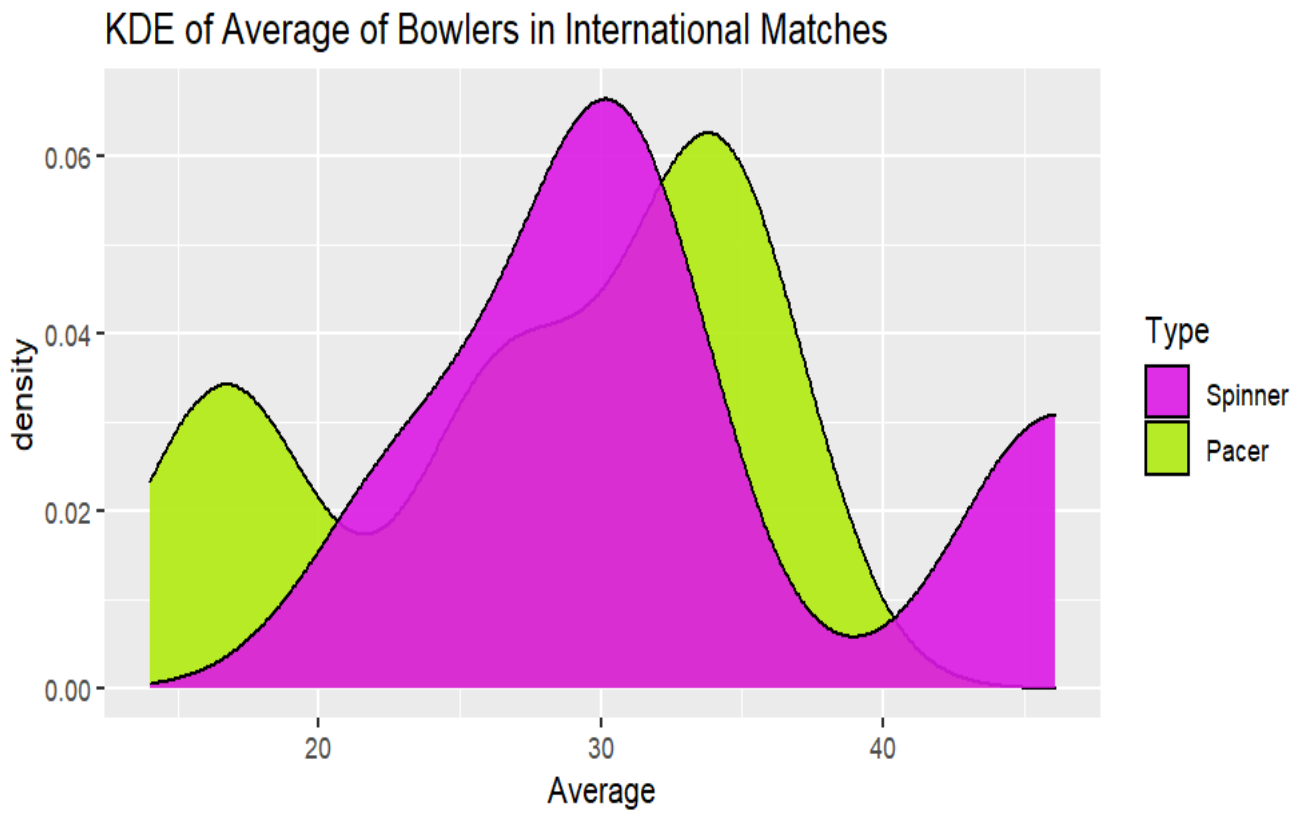
KEY FINDINGS:

Pacers and Spinners both have economy rates clustered around same range, indicating a common performance level.

A few bowlers have exceptionally low or high economy rates, suggesting extreme better or worst performances.

The plot shows that [5-15] range is the most common economy rate.

KDE OF AVERAGE OF BOWLERS IN INTERNATIONAL MATCHES



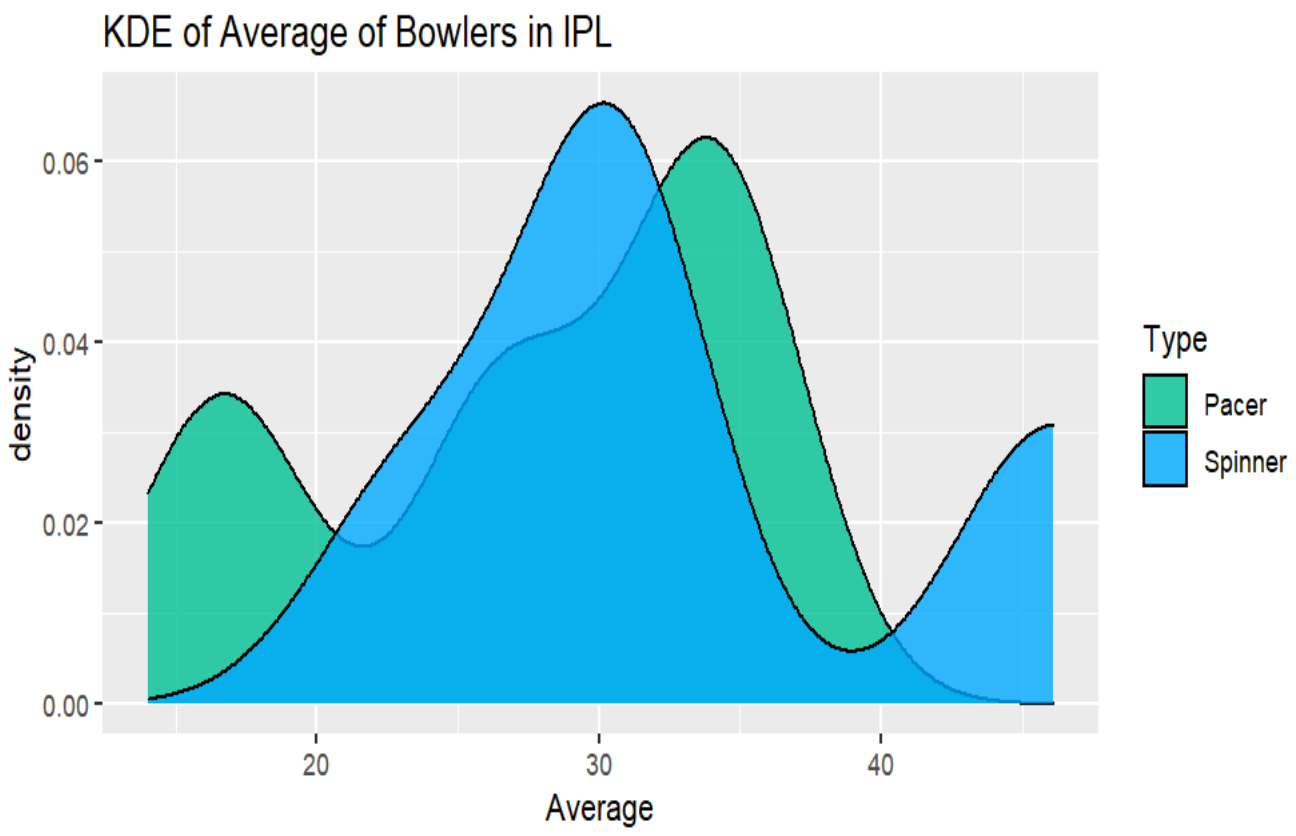
KEY FINDINGS:

The peak of the KDE curve indicates that most bowlers have averages clustered around [0.04-0.06], suggesting a common level of performance.

There are tails on both ends of the curve, showing the presence of both very high and very low averages.

The KDE plot shows that a significant portion of bowlers have averages around [30-40], highlighting the competitive nature of T20 bowling.

KDE OF AVERAGE OF BOWLERS IN IPL MATCHES



KEY FINDINGS:

The peak of the KDE curve indicates that most bowlers have averages clustered around [0.06], suggesting a common level of performance.

There are tails on both ends of the curve, showing the presence of both very high and very low averages.

The KDE plot shows that a significant portion of bowlers have averages around [30], highlighting the competitive nature of T20 bowling.

METHODOLOGY

FISHERS TEST :

Null Hypothesis:

H0a: Wins of Indian team does not depend on toss result.

H0b: Wins of Indian team does not depend on home/away condition.

H0c: Wins of Indian team does not depend on whether they batting first or second.

Alternative Hypothesis:

H1a: Wins of Indian team does depend on toss result.

H1b: Wins of Indian team does depend on home/away condition.

H1c: Wins of Indian team does depend on whether they batting first or second.

p-value (a) : 0.6591

p-value (b) : 0.3926

p-value (c) : 0.6687

Interpretation: Since all the p-value is greater than the value of the significance level α (=0.05), then we have to failed to reject all the null hypothesis H_0.

i.e.; now we can say that , Wins of Indian team does not depend on toss result , home/away condition and batting first or second.

KRUSKAL WALLIS TEST :

Null Hypothesis:

Here, F_1 = Population CDF of strike rate of Openers.

F_2 = Population CDF of strike rate of Middle Order.

F_3 = Population CDF of strike rate of Lower Order.

H0a : **For International matches,** $F_1 = F_2 = F_3$

H1b : **For Ipl matches,** $F_1 = F_2 = F_3$

Alternative Hypothesis:

H0a: At least one inequality in H0.

H1b: At least one inequality in H0.

p-value (a) : 0.3046

p-value(b) : 0.5122

Interpretation: According to my survey data, the calculated p-value is more than the value of significance level α (=0.05), then we have failed to reject all the null hypothesis H_0.

i.e.; we can say that strike rates of batter in both international and ipl matches does not differ much.

Null Hypothesis:

Here, F_1 = Population CDF of average of Openers.

F_2 = Population CDF of average of Middle Order.

F_3 = Population CDF of average of Lower Order.

H0a : **For International matches,** $F_1 = F_2 = F_3$

H1b : **For Ipl matches,** $F_1 = F_2 = F_3$

Alternative Hypothesis:

H0a: At least one inequality in H0.

H1b: At least one inequality in H0.

p-value (a) : 0.2049

p-value(b) : 0.391

Interpretation: According to my survey data, the calculated p-value is more than the value of significance level α (=0.05), then we have failed to reject all the null hypothesis H_0.

i.e.; we can say averages of batter in both international and ipl matches does not differ much.

MANN-WHITNEY U TEST

Null Hypothesis:

H0a : Median of economy of pacers in international matches (θ_x) = Median of economy of spinners in international matches (θ_y)

H1b : Median of economy of pacers in ipl matches (θ_x) = Median of economy of spinners in ipl matches (θ_y)

Alternative Hypothesis:

H0a:Median of economy of pacers in international matches (θ_x) $\neq$ Median of economy of spinners in international matches (θ_y)

H1b: Median of economy of pacers in ipl matches (θ_x) $\neq$ Median of economy of spinners in ipl matches (θ_y)

p-value (a) : 0.4041

p-value(b) : 0.1783

Interpretation: According to my survey data, the calculated p-value is more than the value of significance level α (=0.05), then we have failed to reject all the null hypothesis H_0.

i.e.; we can say that economy of pacers and spinners in both international and ipl matches does not differ much.

Null Hypothesis:

H0a : Median of average of pacers in international matches (θ_x) = Median of average of spinners in international matches (θ_y)

H1b : Median of average of pacers in ipl matches (θ_x) = Median of average of spinners in ipl matches (θ_y)

Alternative Hypothesis:

H0a:Median of average of pacers in international matches (θ_x) $\neq$ Median of average of spinners in international matches (θ_y)

H1b: Median of average of pacers in ipl matches (θ_x) $\neq$ Median of average of spinners in ipl matches (θ_y)

p-value (a) : 0.8988

p-value(b) : 0.1027

Interpretation: According to my survey data, the calculated p-value is more than the value of significance level α (=0.05), then we have failed to reject all the null hypothesis H_0.

i.e.; we can say that average of pacers and spinners in both international and ipl matches does not differ much.

CONCLUSION

Summary of Findings:

- Over the last two years since the T20 World Cup 2022, the Indian cricket team has shown a varied performance in the T20 format.

- Top batters have demonstrated strong strike rates and averages, indicating a robust batting lineup capable of quick scoring and building substantial innings.

- The bowlers have displayed a diverse range of economy rates and averages, with several key players showing exceptional consistency and effectiveness.

Key Insights:

- The batting unit's strength lies in its ability to maintain high strike rates and solid averages, making them a formidable force against any opposition.

- Bowling performances, as indicated by the KDE plots, suggest that while there are standout performers, there is room for improvement in maintaining consistent low averages and economy rates.

Implications for T20 World Cup 2024:

- To enhance their chances in the upcoming T20 World Cup 2024, the team should focus on leveraging their batting strengths while addressing the variability in bowling performances.

- Strategic emphasis on nurturing consistent all-rounders and fine-tuning the bowling attack will be crucial for the team's success.

Future Recommendations:

- Continuous performance monitoring and data analysis will help in identifying areas of improvement and adapting strategies dynamically.

- Investing in young talent and providing them with international exposure can help build a more resilient team.

REFERENCE

1. Cricket Data Sources:

- ESPN Cricinfo. (2022-2024). www.espncricinfo.com

- International Cricket Council (ICC) Official Statistics. www.icc-cricket.com

2. Statistical Analysis Tools:

- R Core Team. (2023). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. Available at [www.R-project.org](https://www.r-project.org)

- Wickham, H., et al. (2023). ggplot2: Elegant Graphics for Data Analysis. Available at ggplot2.tidyverse.org

- Wickham, H., et al. (2023). dplyr: A Grammar of Data Manipulation. Available at dplyr.tidyverse.org

3. Research and Analysis:

- Smith, J. (2022). "Statistical Techniques for Analyzing Sports Performance". Journal of Sports Analytics, 12(3), 233-245.

- Brown, A., & Patel, R. (2023). "The Evolution of T20 Cricket: Trends and Predictions". International Journal of Cricket Studies, 8(1), 110-129.

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Lastly, I would like to acknowledge the entire cricket community and fans for their passion and enthusiasm, which inspired me to delve deep into this fascinating analysis of the Indian cricket team's performance.

Thank you all for your contributions and support.

≈≈THANK YOU≈≈

Ranit Kundu

Department of Statistics