

Hockey Analytics: The Science of Player Performance



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Abstract

The goal of this project is to develop a model which will predict points per minute on ice for offensive NHL players using numerous inputs. While many sports have undergone an analytics revolution, hockey has lagged behind likely due to the fluid nature of the sport. The hockey analytics community has still managed to churn out new measures of player performance over the past couple years such as the **Corsi** and **Fenwick** statistics which are used throughout the league. Many teams have begun relying upon these new statistics without visibility into their reliability of predicting actual player performance. We believe our study provides novel insights into what the most important predictors for points per minute are for forwards and how they can be used to inform NHL coaches when selecting a lineup or signing new players.

Introduction

- The NHL is a multibillion-dollar corporation yet according to Business Broadway it is ranked 3rd in percentage of teams "All in" in data analytics usage in major sports
- Rely on mostly descriptive analytics.
- By leveraging predictive analytics to evaluate players the NHL will increase its competitiveness and drive business growth

Major Research Questions:

- Can an interpretable parametric predictive model be a better predictor of player efficiency and scoring than commonly used statistics?
- What key metric can NHL teams exploit in order to increase a players scoring efficiency and which players are underutilized?

Literature Review

Study	Age	Shots	Fenwick Rating	Corsi Rating	Turnovers	Hits	Goals	Faceoffs	Penalties
(Brander, 2014)	X								
(Macdonald, 2012)		X	X	X	X	X	X	X	
(Macdonald, 2012)		X	X	X			X		
(Schuckers, 2013)		X			X	X	X	X	X
(Weissbock, 2013)		X	X				X		X

- Our research differentiates itself by focusing on predicting player efficiency and using a wider scope of input variables.
- Examples of new variables included are Power Play TOI and Offensive Zone Starts.

Significant Factors for Evaluating Players:

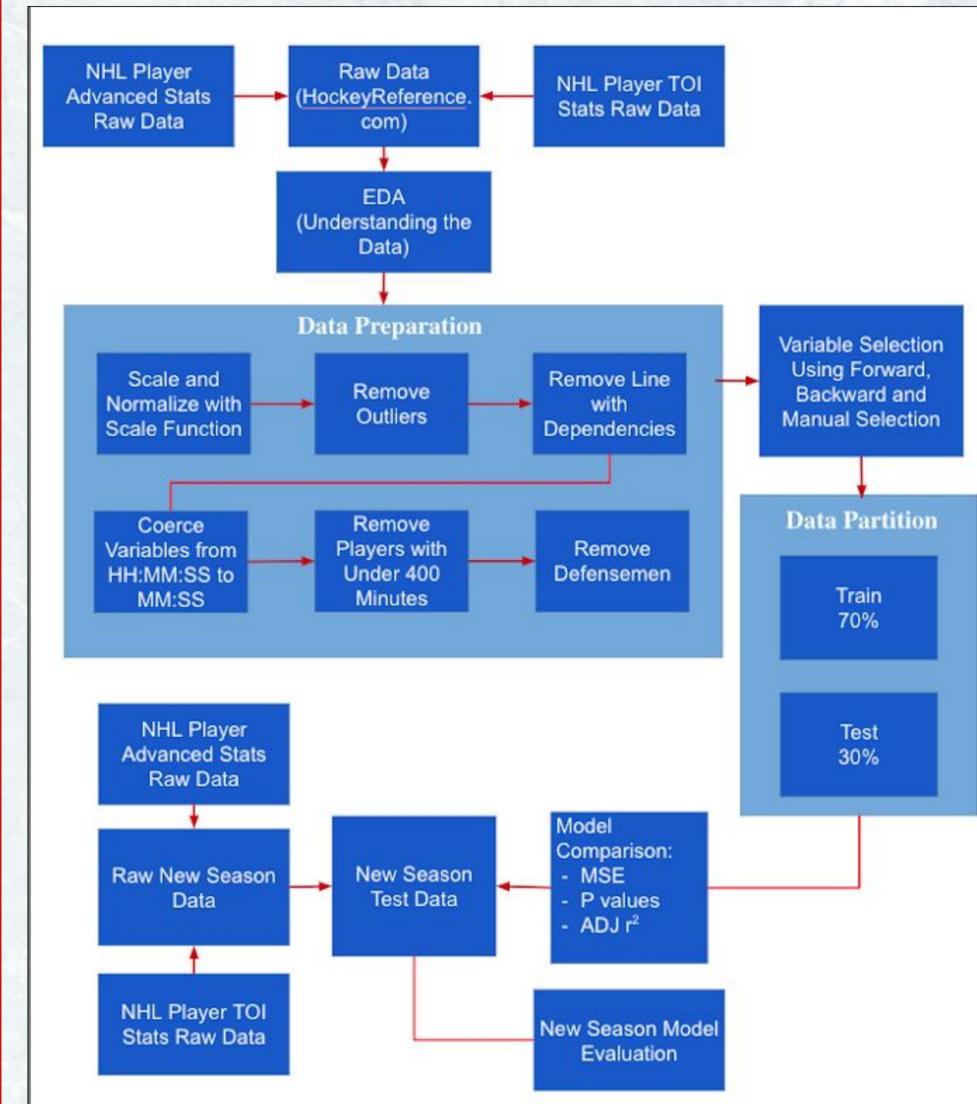
- **Position**
- **Hits**
- **Even Strength Time**
- **Power Play on Ice**
- **Plus-Minus**
- **Giveaways**
- **Shooting Percentage**

QR CODE

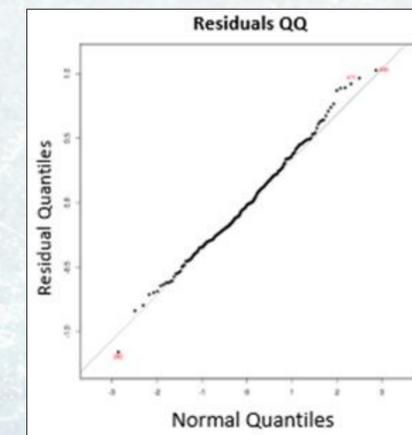
Conclusion

- Our predictive model allows to predict scoring efficiency across different seasons with approximately 82% accuracy
- Enables NHL teams to target undervalued players through assessing metrics outside of scoring efficiency
- Offers strategic insights regarding player playstyle and utilization during key scoring opportunities in order to optimize point production
- As a result, it is possible to create an interpretable parametric predictive model predicting scoring efficiency
- The NHL needs to find new dynamic statistics to improve predictive analytics, such as recording the speed of each shot

Methodology



Results



Data Set	Accuracy
Training	83%
Testing	82%
2017 Season	82%