

# COMPARING DEFENSIVE PRESSURES USING POSSESSION RETENTION PROBABILITY AND EXPECTED GOALS

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# INTRODUCTION

Hits per game are on the decline and strategies are evolving.

Understanding the value of associated defensive pressure techniques will provide insight into their use cases and could influence tactics

# BACKGROUND

Event types were classified into three categories and variables of interest were selected

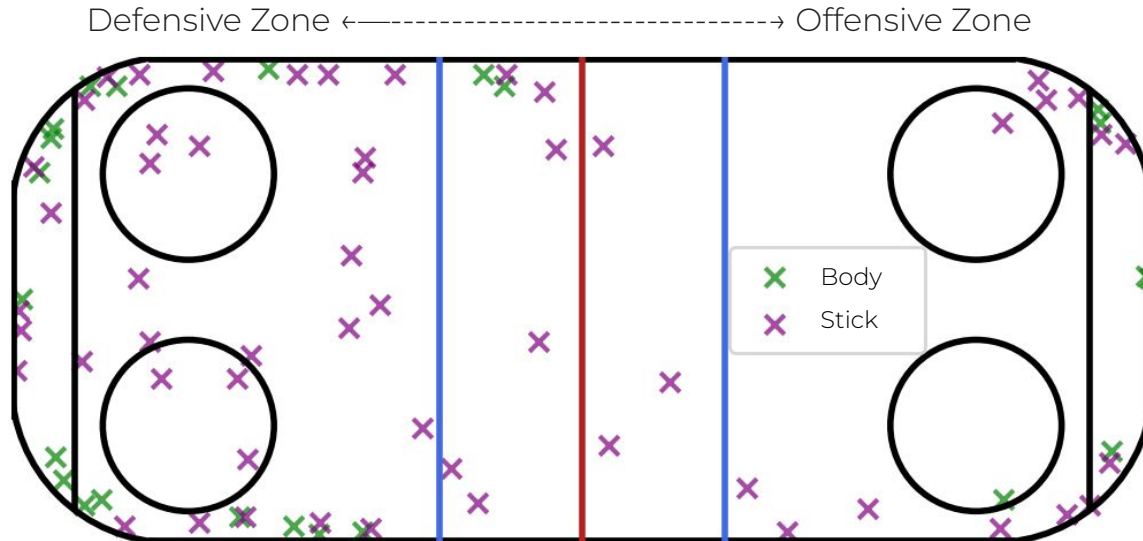
Possession-Continuing	Possession-Terminating	Other
carry	shot	save
pass	dump in	rebound
puck protection	dump out	controlled entry
loose puck retrieval	offside	controlled exit
check	icing	faceoff
reception	penalty	shootout events
controlled entry against	penalty drawn	goal
block		assist

# SPATIAL DISTRIBUTION OF CHECKS

## Comparing Body Checks and Stick Checks

The majority of checks occur in the defensive zone.

Body checks take place more frequently along the boards, while stick checks are more evenly distributed



# METHODS AND ALGORITHMS

## Features for Possession Retention Probability Model

Period

Time remaining in period

# of Skaters on the Ice for Both Teams

Whether the team in possession is the home team

Score Differential

(x,y) Coordinates of the Event

Name and Type of the Event

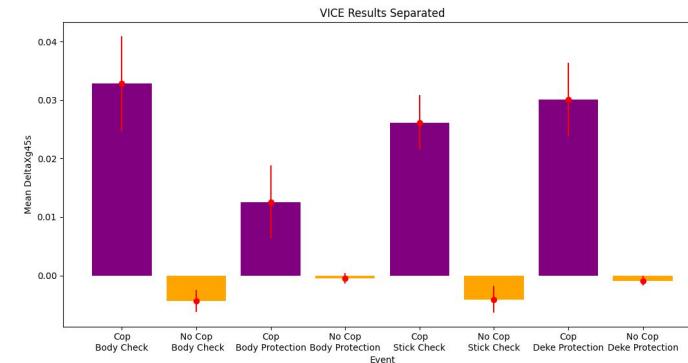
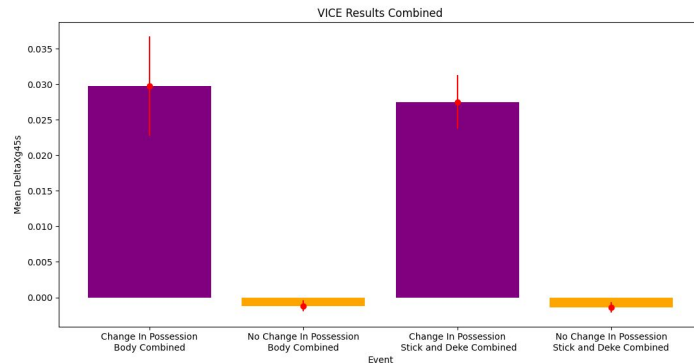
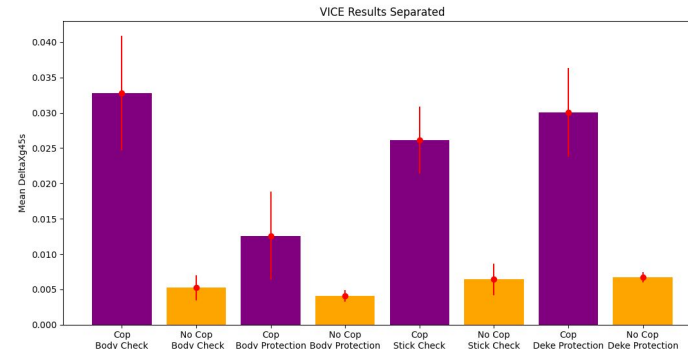
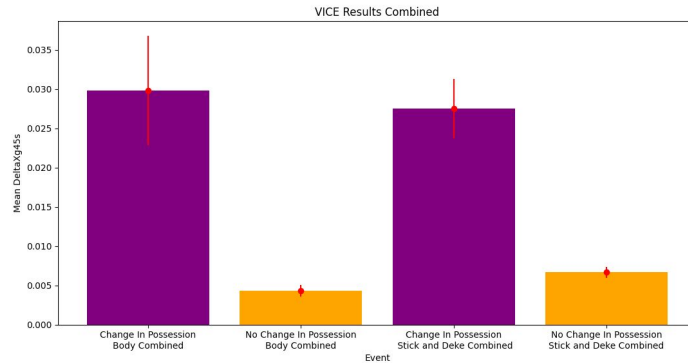
Position of the Player Committing the Action

## Our Metric: Offensive Relative Event Contribution (O-REC)

Inspired by VICE from [Douglas et al](#), we created a metric to compare the change in expected goals that each event gave to the team in possession.

The resultant value incorporates the “risk” of action and its expected “reward” in terms of generating a shot from the location where the event takes place.

# VISUALIZATIONS: CHECKS & PUCK PROTECTIONS



# IMPLICATIONS OF FINDINGS

## Differences in Check Types

Body puck protections offer less offense in the case of a change in possession. Similarly, body puck protections offer less offense in the case that there is no change in possession.

Body checks have a higher turnover probability than stick checks, but generate less resultant offensive opportunity on changes in possession.





# APPLICATIONS AND FUTURE STEPS



## **Areas of Application**

One could use O-REC to compare the effectiveness of checking strategies at different locations on the ice, as well as understanding player tendencies and abilities based on their checking data.



## **Avenues for Extension**

With individual shift data and information on the location of others players on the ice during an event, one could evaluate the decision-making of both the offensive and defensive players involved in an on-ice interaction, which would improve the O-REC's versatility.

# THANK YOU FOR LISTENING



[GITHUB PAGE](#)

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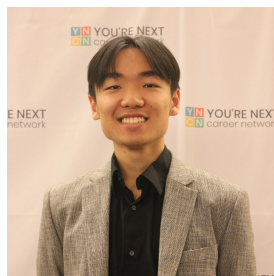
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