NHL Trade Deadline Strategies:
Prioritizing All-Stars vs Role-Players

BrainStation Capstone Project

Subject Area Overview

Problem Statement / Opportunity

Every year NHL teams compete for a place in the Stanley Cup Playoffs. I will employ machine learning to assess whether a team's playoff performance can be predicted based on their trade-deadline activity.

- NHL Background Info
  - 32 Teams (30 from 2006 - 16 ; 31 from 2017 - 20)
  - 16 Teams make playoffs
  - "Trade Deadline" - final date for in-season transactions
- "Buyers" - teams competing for playoffs
  - Trade away future assets for proven players
  - Focus on All-Stars, Role-Players, or Combo
- "Sellers" - teams not contending in current season
  - Trade away current players on 'expiring contracts' for future assets
  - 'Expiring contracts' may leave for another team after season concludes with no return for "sellers

Vision for Project

- Use Data Science and Machine Learning to classify player types (All-Star vs. Role-Player) based on numerous individual statistics
- Use Machine Learning to build a model assess a team's relative success based on their transactions (traded for All-Star vs Role-Players), among other factors, and ultimately whether they won the Stanley Cup
- Use previous season data to predict how teams will fare in the current season, although the playoffs will not begin until after the end of bootcamp.

Potential Impact

- Trading for “All-Stars” can often have a great impact on team culture, as well as the team’s succeeding season
- While these impacts are harder to quantify, offering statistical evidence could lead to employing different strategies in the future

Data Overview

- Hockey Trades Since 1918 (Kaggle)
  - Incomplete DataSet
  - Used for Initial EDA
  - Approximately 1500 mid-season trades between 2005 - 2021
- CapFriendly
  - Web Scraping to complete dataset
    - NHL Transactions 2005 - current
    - NHL Salary Cap Information (additionally player data)
- Hockey Reference
  - NHL Player Data
    - Approximately 1000 NHL players active per season
    - Classify All-Star vs. Role-Player
  - NHL Team Data
    - Quantify Team Success

Issues / Next Steps

- Initially was trying to work with an API for all data, however the API did not run for more than the current season. Upon reaching out, the full-access was $1000+ per year

- Web Scraping Cap Friendly to complete data set
  - Implementing Web Driver to further drill into the correct data needed across all seasons (2006 - current)

- Win the Stanley Cup!
  - Build Model to assess and predict!