

The background of the slide is a photograph of an ice hockey rink. In the center, a red goal net is visible. Behind the net is a glass barrier with vertical white posts. The ice surface is white with yellow lines. The text is overlaid on a semi-transparent white rounded rectangle in the center.

# Predicting NHL Player Salary

by Charles Ramey for General Assembly DSI

# Problem Statement

This project seeks to design a data-driven approach that can leverage historical data and advanced modeling techniques to help NHL executives balance their budgets, invest in their rosters, and remain competitive within the league.

# The Rhythm of Player Contracts

- Player contracts expire
- Talented athletes become free agents
- Opportunity to earn a higher-paying contract



# The NHL Executive's Challenge

- Evaluating talent
  - Inside and outside of the organization
- Salary Cap Limits
  - Keeps the league fair
  - Allows smaller market teams to compete
  - Creates a challenge for owners and managers

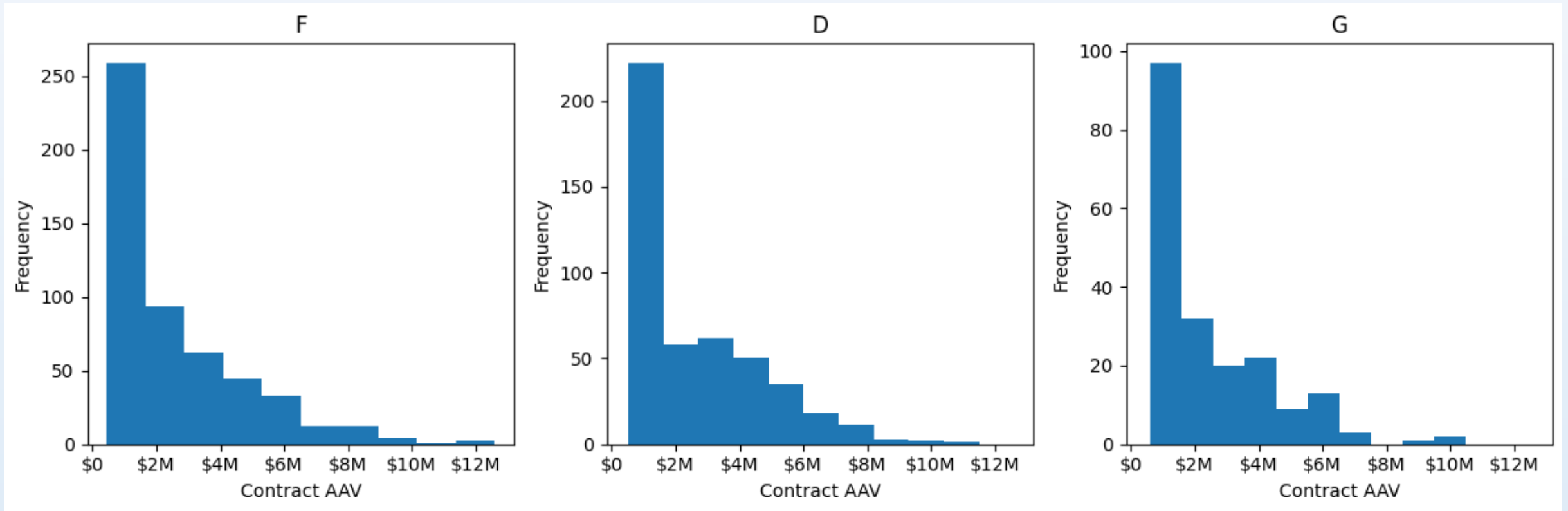
PLAYER	TEAM	AGE
1. Connor McDavid	 EDM	25
2. Artemi Panarin	 NYR	30
3. Auston Matthews	 TOR	24
4. Erik Karlsson	 SJS	32
5. Drew Doughty	 LAK	32
6. John Tavares	 TOR	31
7. Mitchell Marner	 TOR	25
8. Carey Price	 MTL	34
9. Patrick Kane	 NYR	33
10. Jonathan Toews	 CHI	34

# Data Collection

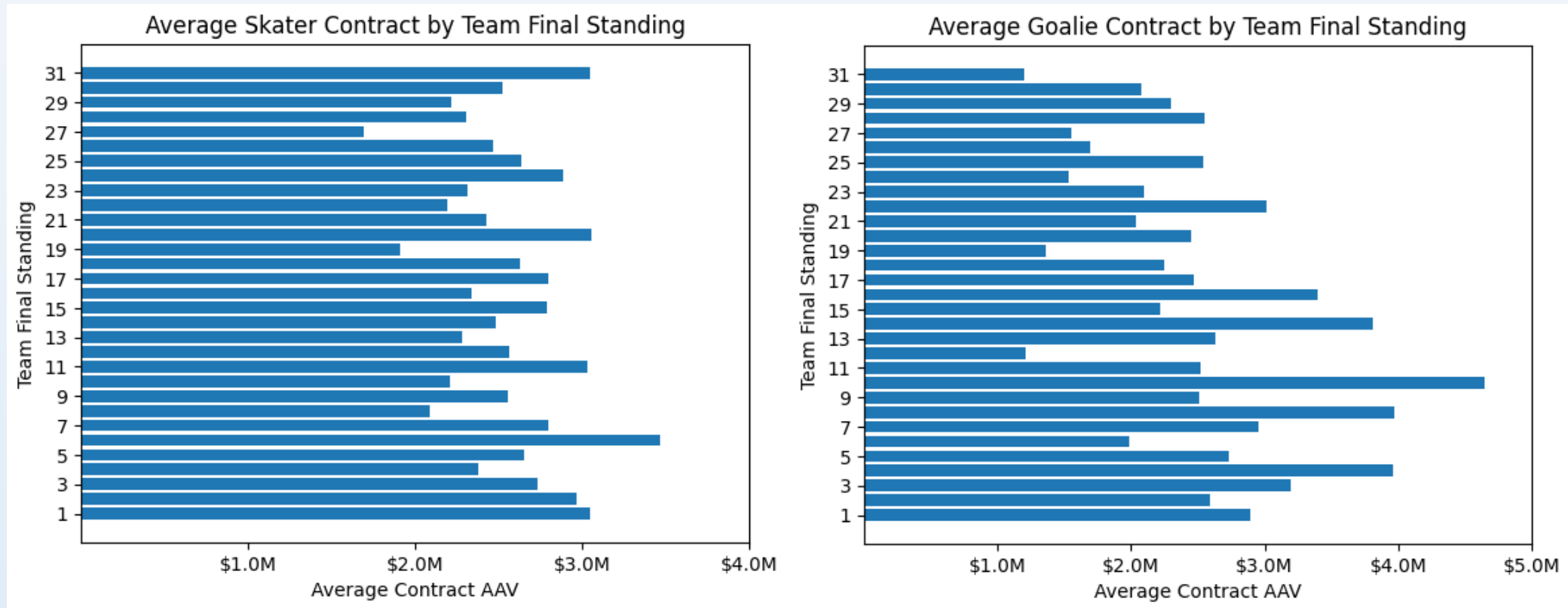
- Scraped from three websites:
  - CapFriendly
    - Signings (2011-12 to 2021-22)
    - Salary Cap (2010-11 to 2022-23)
  - MoneyPuck
    - Skater Stats (2010-11 to 2022-23)
    - Goalie Stats (2010-11 to 2022-23)
  - Hockey-Reference
    - Team Standings (2010-11 to 2022-23)

Date Range			
DATE	TYPE	EXTENSION	STRUCTURE
2023	Entry-Level		2-way
2023	Standard		2-way

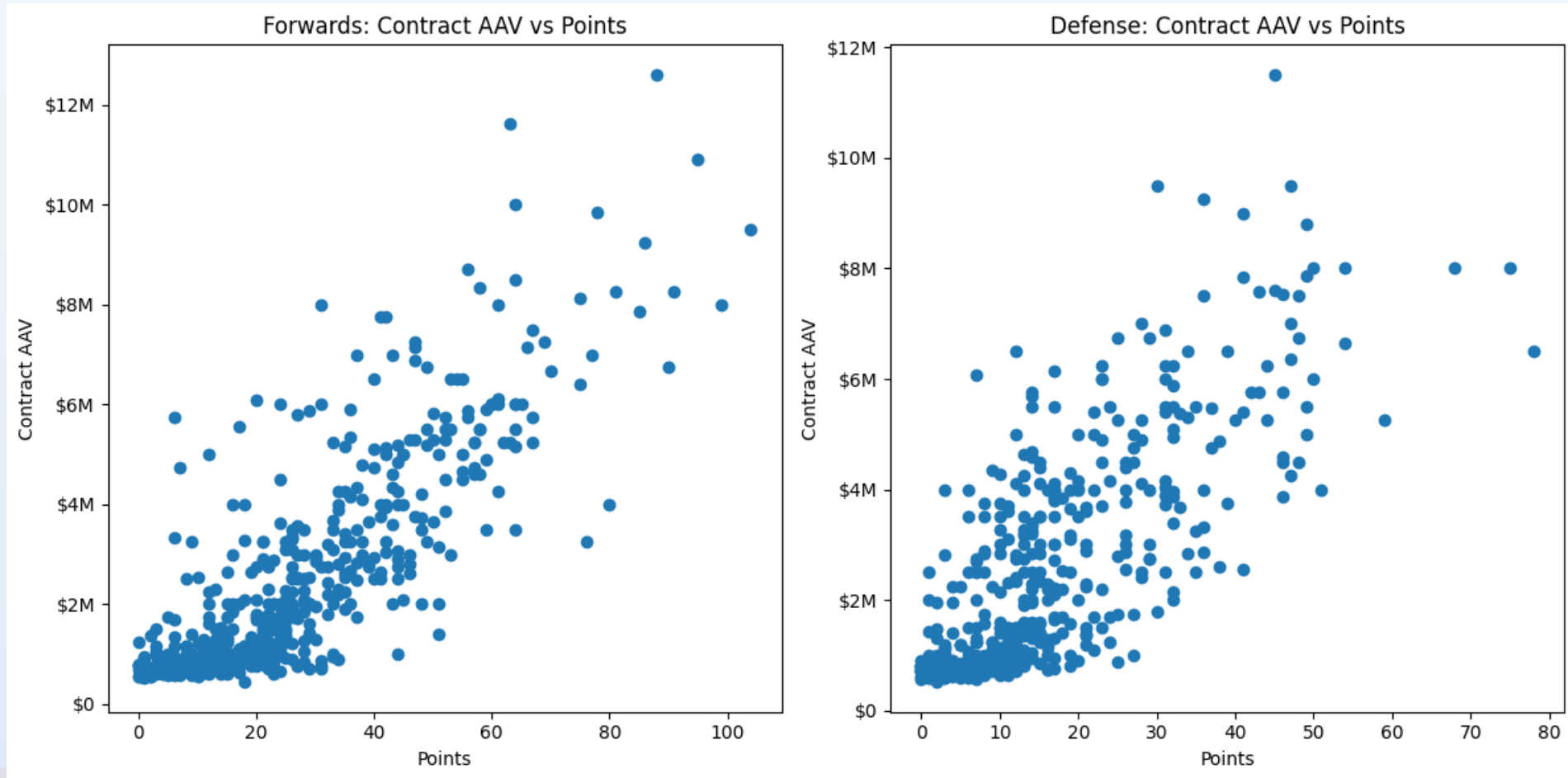
# Exploring the Data



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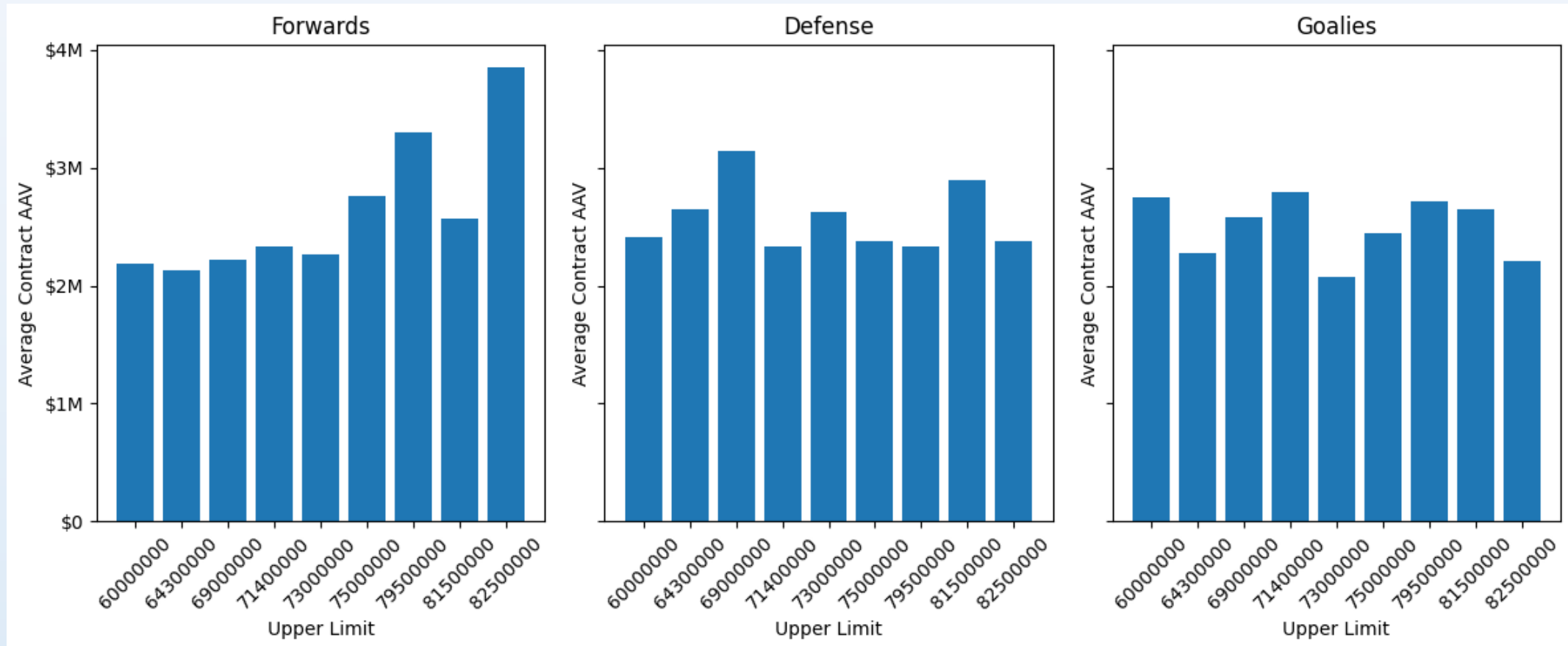


# Exploring the Data





# Exploring the Data



# Modeling

- Different Stats | Different Models
  - Forwards
  - Defense
  - Goalies
- Model for goalies performed the worst
  - Fewer data points to train on

# Conclusions

- Limited Data
- Time-dependent data
- Models need tuning

# Recommendations

- Combine forwards and defense
- Normalize data on per-game basis
- Test a wider variety of hyperparameters

# Web App Demo