Schedule for Today

1. Intro to Hockey
2. Simple Win Probability Modeling Example
3. NBA Win Probability Workshop

Hockey Rules (the basics)

- 6 players on ice for each team at any given time
  - 3 forwards
  - 2 defenders
  - 1 goaltender
- 3 periods, 20 minutes each
- Goal: score more points (by putting the puck in the opponent's net) than the other team over the course of the game
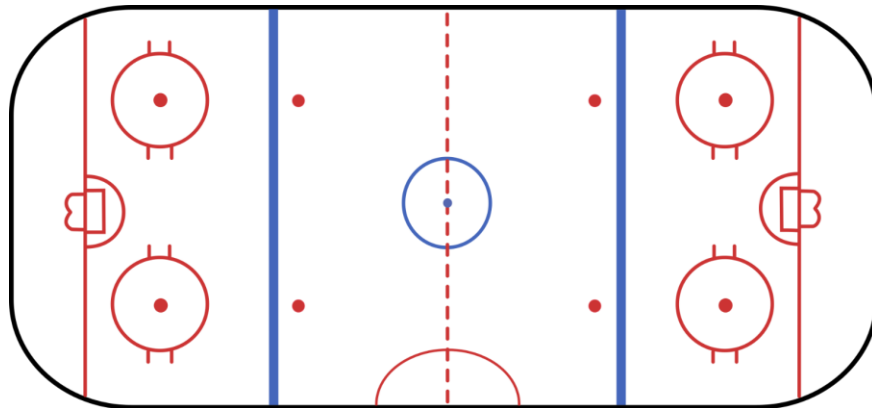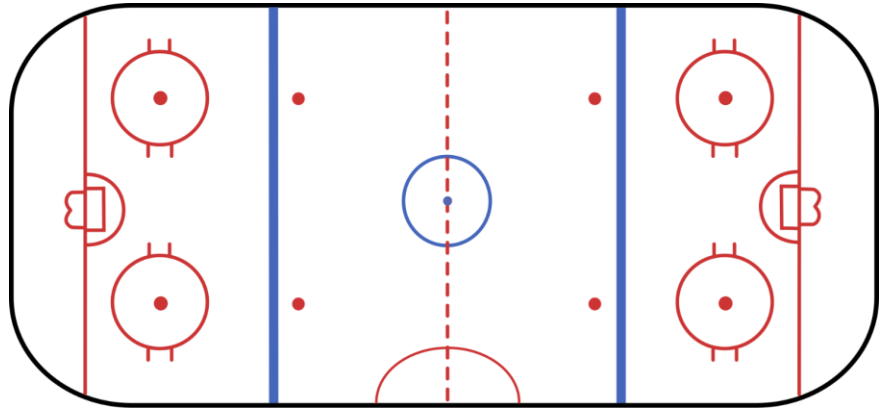
Hockey Rules (the basics)

- Important Events in Game:
  - **Goals** (when a shot puck scores)
  - **Assists** (passes that lead to goals)
  - **Blocks** (when goalies block a shot)
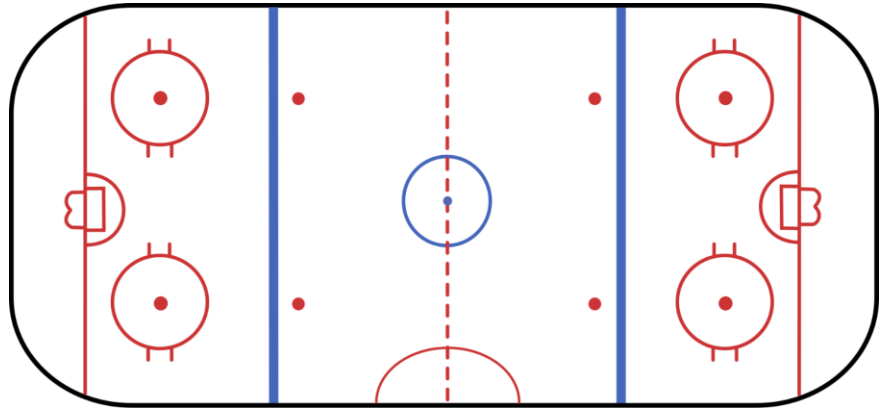
Hockey Rules (the basics)

- Important Events in Game:
  - **Power Plays** (periods of time after **penalties** where one team has more players on the ice
  - **Face Offs** (when a player on each team are given an equal chance to win the puck)

Hockey Rules (more advanced concepts)

- Overtime
  - When a game is tied, teams play an overtime period. In some cases, the game will remain tied after that period (and neither team will win).

- Line Shifts
  - The five (non goalie) players on the ice for a team usually play together in a **shift**. Some players may play in multiple shifts, or play better with certain teammates.

Hockey Rules (more advanced concepts)

- Penalties
  - Some penalties are minor (leading to 2 minute power plays) and some are major (leading to 5 minute pps), and penalties can stack (two minor penalties on the same team, 10 seconds apart, means one team will have two extra players for 1:50)

- Goalie Pulls/Empty Nets
  - Some goalies don't play the full game, but are replaced by an extra forward towards the end of the period when a team is losing in order for the team to try to score. This is rare, but leads to higher variability in scores.

Hockey Rules (anything I've missed)

Admittedly, I'm not a hockey expert. There may be more nuances that I'm missing, but I've based everything before this slide on the features that could (I believe) be reasonably measured for the purposes of this project.

If anyone is a hockey fan and has anything else to share, please speak up!

Modeling Win Probability

Any of these aspects of hockey might have an impact on the probability a team wins the game. Let's look at the 2023-24 NEU Women's data we previously scraped, and work at building a (very simple, not very good) model for whether the home team in a game will win or not.

This code will be added to the NU_WIH_Scraping.ipynb file that is in the competition [GitHub repository](#) (will be updated tonight).

Modeling Win Probability (NBA workshop)

Now, I'll turn it over to a couple NEU students who have worked on a simpler problem, with a more complex modeling framework, but who are happy to share their process to give you a more robust idea of how you might approach the competition.