Analytics on Ice … The Long Change (draft program 9/20)

Timetable: (Contributed talk abstracts are on the next page…)

8:30 – 9:15 – Registration and welcome, Olin Hall Lobby (Babson Campus Map)

9:15 – 9:30 – Welcome and introductions, Olin Hall Auditorium

9:30 – 10:30 – Invited Speaker, Olin Hall Auditorium, Michael Schuckers, St. Lawrence University

Read about Michael at his websites https://www.stlawu.edu/people/michael-schuckers and http://statsportsconsulting.com/about-us/

10:30 – 11 – Coffee break; discussion and networking

11- Noon - Contributed paper session or workshop … Two choices!

Option 1 – Computer Workshop: *Reproducible hockey analysis using R Statistical Software* Mike Lopez, Skidmore College. Open to all. Participants are welcome to bring a device with the R & RStudio software packages already installed, which are freely downloadable from https://cran.r-project.org/ and https://www.rstudio.com/products/rstudio/download/"

Option 2 - Contributed papers from Steven Miller, Marc Rubin, Joseph Nelson/Brian Carothers

Noon – 1 - Lunch

1:15 – 2:15 – Invited Speaker, Olin Hall Auditorium, Rob Vollman, www.hockeyabstract.com
Read about Rob at his website www.hockeyabstract.com

2:15 – 3 – Panel discussion: Hockey Analytics Communication … To coaches, players, media and the public!

3 – 4 PM - Contributed paper session AND perhaps another workshop!

Contributed Papers from Eric Cantor, Cole Anderson … more to come!

Abstracts of presentations (Specific times and rooms to be added later…)

Morning session:

Pythagoras on the Ice

Speaker: Steven J Miller, Williams College

The Pythagorean Won-Loss formula has accurately estimated team's winning percentages in baseball for years, and is now one of the standard statistics displayed on expanded pages. We discuss its derivation, consequences, and show that it is applicable in hockey as well. This is joint work with Kevin Dayaratna.

Still Missing Stats

Speaker: Marc Rubin, retired 38-year veteran stats professor who has been consulting for years with top NHLPA agents including Allain Roy, Marc Levine, Peter Cooney, Mike Bogdan and numerous others.

The top 5 teams in NHL had PK% 82.3 or above. Non-playoff qualifying teams such as CALGARY.OTTAWA,ARIZONA and WINNIPEG had "kill rates" of 78.4% or less. In fact PK% has strong 0.448 correlation to TEAM points. YET the success of individual players on PK is OVERLOOKED. Certainly this is not the case regarding individual players on PP. I'll present the wide variation among defense-men as well as centers regarding their performances in killing penalties. Another stat that I chart is ratio of HITS to MINOR PENALTIES in order to distinguish the actual "rugged" players from those who are "careless"

The Defenseman's Paradox: Explaining League-Leading Players with a High Number of Hits and Blocked Shots

Speakers: Joseph Nelson (George Washington U.) and Brian Carothers

Advanced analytics in hockey have demonstrated the value of possession-centric statistics. To identify top players, hockey statisticians often uniformly condemn blocked shots and hits. This results in what we identify as "the defenseman's paradox," wherein even league-leading defensemen log a high number of blocked shots and hits per sixty minutes. In this research, we propose evaluating players' defensive skill by the maximization of their Corsi Against less Fenwick Against—given a player does not have the puck, they should maximize blocked shots. We regress this value against a player's number of hits, giveaways, and takeaways, and shots taken. These results provide an objective shot-blocking maximization function, suggested tipping point for when a player may be making too many hits.

Afternoon Session:

Study of Optimal Roster Structure in Hockey

Speaker: Eric Cantor

The goal of my research was to identify if in professional hockey, performance differences exist when teams use a non-traditional roster format. The standard roster structure for each game in hockey consists of twelve forwards and six defensemen, however the usage of only eleven forwards in exchange for an extra defensemen has been a lineup recently employed with much frequency by the Tampa Bay Lightning over the past three seasons. My research objective was to analyze recent game data to determine if structuring game day rosters in this progressive format attains a measurable advantage.

The research possesses significant relevance to hockey management teams across all levels of hockey from the NHL and other professional leagues to the minor leagues, juniors, international play, and even beyond. The current flood of analytics and data to the sport of hockey is leaving NHL management teams vigorously scouring the data in order to identify any and all possible advantages in managing their franchises in the intensely competitive, salary cap era of the league. A potential benefit from an adjustment to the standard roster structure of a team's game day lineup is a possible advantage that has not been explored in great depth, aside from the Tampa Bay Lightning over the past three seasons. The identification of a possible correlation to increased success with a lineup containing seven defensemen, rather than the traditional six, is an intriguing and appealing thought to my research and hockey management teams across the world.

Through the analysis of shot metric and possession data, the results clearly depict an increased success rate when a seven defensemen roster is deployed. Hockey is rapidly evolving towards a game with a faster tempo and more mobile defensemen. The increased mobility of defensemen however often increases their skating distance and fatigue. There are many possible applications for the seven defensemen strategy but the emerging popularity of the mobile defensemen is a strong complement for the developing strategy of the seventh defensemen. Other ideas for future exploration include the factor of fatigue, individual player analysis, applying zone transition and breakout data, passing data, other forms of tracking data, and more.

Crowd Wisdom and Player Evaluation

Speaker: Cole Anderson

I would like to discuss blending the eye-test and on-ice metrics using data from my year-long project that used crowd wisdom to evaluate player ability. The project combines user input to generate a player-level rating based on the Elo formula, weighting user input proportional to their demonstrated scouting foresight. Thousands of ratings from hundreds of scouts have been tracked to create a dynamic rating for each NHL player.My analysis will explore the relationship between crowd sourced data and objective on-ice data. This exploration can:

a) create models that can be applied prior seasons and also better evaluate scouting 'skill'
b) help validate the crowd-sourced data and also identify players misvalued by the 'crowd'
c) reveal directionality of eye-test biases