

# POINT TREND VALUES

## AN ANALYSIS OF CUMULATIVE POINT PRODUCTION AMONG JUNIOR HOCKEY FORWARDS

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### ABBREVIATED ABSTRACT

A common theory among NHL scouts is that if a prospect improves as the season progresses, he will continue to improve in the future and he can elevate to another level when the games become more meaningful.

This poster will put this idea to the test by using OHL and WHL forwards' cumulative point totals as their season progresses to create a new metric called the Point Trend Value (PTV) that measures the rate at which a player's point production improves or declines over a season.

Upon calculating this metric for all players in the data set, I will analyze if this improvement or decline in point production has any predictive power on future success or any influence on NHL draft results.

### RELATED RESEARCH

The development of the Point Trend Value was not influenced by outside sources but methods for evaluating the predictive power for this metric were influenced by the following research.

1. N. Nandakumar, Hot Hands in Hockey (Vancouver Hockey Analytics Conference, 2018)
2. A. Novet, Enhancing Traditional Shift Analysis with Transitional Play Data (Columbus Blue Jackets Hockey Analytics Conference, 2020)

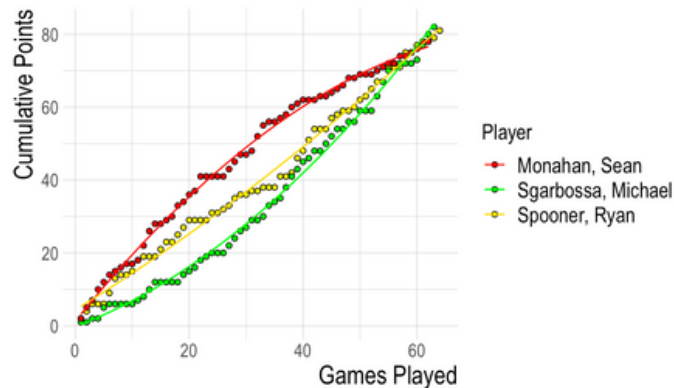
# MOTIVATION AND PLAN

## CONVENTIONAL SCOUTING WISDOM

“Looking at this season's stats alone doesn't allow one to make many useful projections for the future. One has to compare not only to past seasons but over the course of the season. Players who start hot but fade down the stretch, in particular in the playoffs, likely had some early success due to some surprise element and the fact that more borderline players will play on opposition teams in the early going. If they were unable to increase their performance as they should have become more used to the league and team, if they didn't pick up the pace when the chips were down, it doesn't augur well for an NHL future.”

- Mike Guest, Author of “Eagle Eyes - What Scouts Look For”

## AN EXAMPLE



**SEAN MONAHAN**

OHL SEASON  
**DECLINED** (Red arrow pointing down)  
NHL CAREER  
**NHL STAR** (Green arrow pointing up)

**RYAN SPOONER**

**STEADY** (Yellow arrow pointing right)  
**MIDDLE-6 FORWARD** (Yellow arrow pointing right)

**MIKE SGARBOSSA**

**IMPROVED** (Green arrow pointing up)  
**MINOR LEAGUER** (Red arrow pointing down)

## TESTING THIS THEORY ON A LARGE SCALE

### THE DATA

OHL and WHL (junior league) forwards

Between 2010-11 and 2018-19 seasons

Minimum 40 GP and 30 Pts

2,489 seasons of player gamelog data

### THE ANALYSIS

Design a metric to quantify the rate at which a player's point production is improving or declining over a season.

Determine if this metric is an indicator of future success.

Test if NHL draft patterns are influenced by this metric, identifying possible recency bias in the process.

# METHODOLOGY

**Point Trend Value:** a measure of the rate at which a player's point production improves or declines over a season.

## CREATING THE POINT TREND VALUE

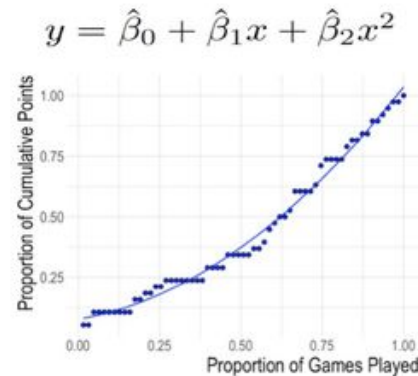
1. GATHER OHL AND WHL GAMELOG DATA

Games Played	Cumulative Points
1	1
2	3
...	...
67	77
68	79

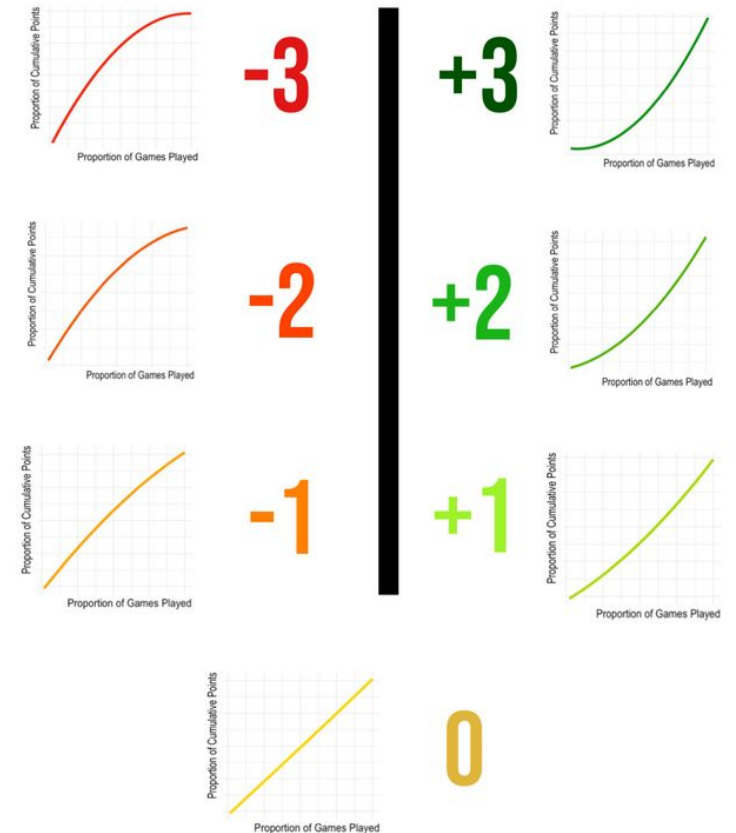
2. SCALE THE DATA FROM 0-1

Scaled GP	Scaled cPts
1 / 68	1 / 79
2 / 68	3 / 79
...	...
67 / 68	77 / 79
1	1

3. FIT A QUADRATIC MODEL TO THE DATA



## INTERPRETATION



5. Z-SCORE THE DATA TO GET THE POINT TREND VALUE

$$PTV = \frac{2\hat{\beta}_2 - \mu}{\sigma}$$

where  $\mu$  and  $\sigma^2$  are the mean and variance of  $2\hat{\beta}_2$  for all players in the data set

4. TAKE THE 2ND DERIVATIVE OF THE QUADRATIC REGRESSION EQUATION

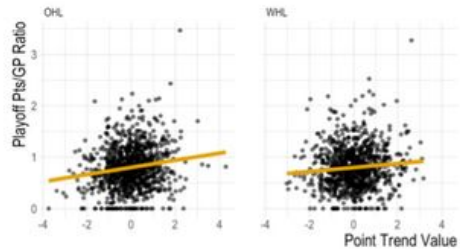
$$\frac{d^2 y}{dx^2} = 2\hat{\beta}_2$$

# RESULTS

## DO POINT TREND VALUES HAVE ANY INFLUENCE ON FUTURE SUCCESS?

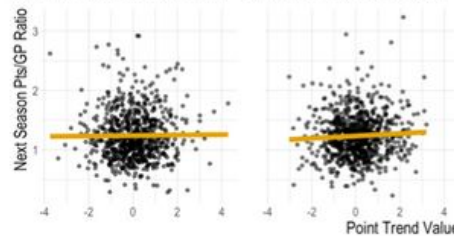
(This can be tested by taking the player's Pts/GP in the future campaign vs their Pts/GP in the season we are analyzing and comparing to the player's PTV)

### ... IN THE PLAYOFFS?



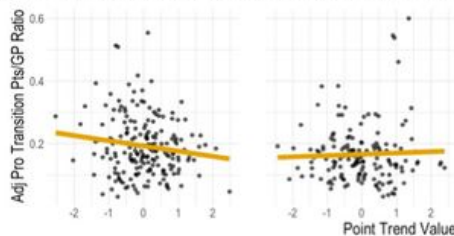
**SLIGHT POSITIVE CORRELATION  
(POTENTIAL HOT HAND EFFECT)**

### ...IN THE NEXT CHL SEASON?



**NO CORRELATION**

### ...IN TRANSITION INTO PRO HOCKEY?



**NO CORRELATION**

## MAIN TAKEAWAY

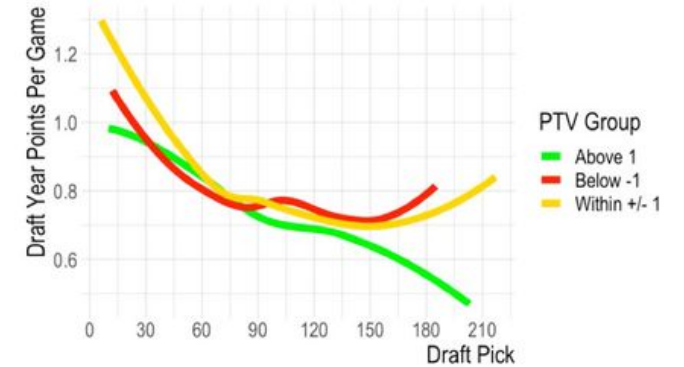
Point Trend Values have no predictive power on success beyond the current season. However, NHL draft results show signs that teams tend to have some bias towards players with a strong finish to the season.

## DO POINT TREND VALUES HAVE INFLUENCE ON DRAFT STOCK?

**YES**

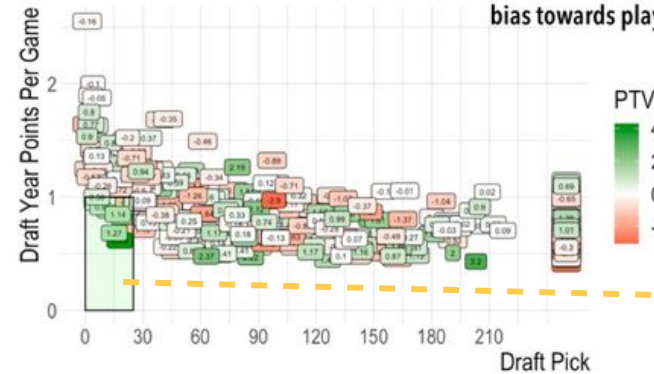
### MACRO-TREND

Players with PTV >1 tend to have a lower Pts/GP than players picked at a similar position in the draft with PTV <1.



### MICRO-TREND

The majority of players with under 1 Pts/GP drafted in the top 25 have high PTVs. Indicating that teams might have some recency bias towards players with strong finishes.



Player	Season	Pts/GP	PTV
L. Foudy	2017-18	0.62	4.29
T. Dellandrea	2017-18	0.88	1.43
Z. Senyshyn	2014-15	0.68	1.27
S. Laughton	2011-12	0.83	1.25
L. Crouse	2014-15	0.91	1.19
C. Lazar	2012-13	0.85	1.14
B. Horvat	2012-13	0.91	0.96
B. Hayton	2017-18	0.95	0.10
J. McCann	2013-14	0.97	-0.73
C. Bleackley	2013-14	0.96	-1.27
M. Jones	2015-16	0.83	-1.75