

Understanding NHL Attendance: A Case Study of Fan Adoption in the NHL

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ABSTRACT

The purpose of this study is to understand what factors influence attendance at National Hockey League games. The factors that were the focus of this study include team points, fights, goals scored, average age, and average cap space, each on a per season basis from 2006 through 2017 (excluding the strike shortened 2012-13 season). It investigates what areas an upstart NHL franchise should focus on to develop a strong fan base.

INTRODUCTION

With the launch of the NHL's 31st franchise at the beginning of the 2017-18 season, the question of how a franchise can develop a strong fan base is a very relevant one. What can a team do to effectively attract prospective fans? This SIP addresses some of the different areas a team can focus on to develop and maintain a strong and stable following. The findings give insight into how an upstart franchise can be successful early on not only on the ice but off of it as well.

MATERIALS AND METHODS

The data used in this analysis were retrieved from a variety of sources. The attendance and goals scored data were compiled from hockeydb.com. The fights per year information was found on hockeyfights.com. Average age and cap information was retrieved from nhlnumbers.com. Considering that the information from the nhlnumbers.com only went back to the 2007 and 2008 National Hockey season, this limited the data used in this analysis to that season. The NHL had a lockout during the 2012 and 2013 season, in which teams only played 48 games, so that season was excluded from the data set. After compiling all of this data, I ran multiple regressions relating each variable to the average attendance per season, which factored if each franchise was reaching the full capacity of their arenas not to disadvantage franchises with smaller arenas.

RESULTS

Average fights per year was shown to have a slight negative coefficient (-0.000054) with a low standard error (.0015). However, the probability value, or p-value, was high (.71) meaning the result could not confirm the hypothesis that fighting negatively impacts attendance.

Average points per year was shown to have a slight negative coefficient (-0.0014) with a low standard error (0.0024). However, the p-value was relatively high (0.57) meaning that the hypothesis that average points in a season, the proxy used for winning, cannot be confidently rejected.

Average goals per year was shown to have a slight positive coefficient (0.0027) with a low standard error (0.0014). This statistic was accompanied by a low p-value of (0.058) and was confirmed with an additional regression. This meant that the hypothesis that average goals in a season would have a positive impact on attendance can be confirmed.

Average age of a hockey team was shown to have a negative coefficient (-0.022) with a low standard error (0.022). The p-value was again high with this statistic (0.31) meaning that the hypothesis that an older team would lead to higher attendance could not be confirmed.

Average cap space available was shown to have a negative coefficient (-0.016) with a low standard error (0.005). This statistic was backed up with a low p-value (0.006) meaning that the hypothesis that lower average cap space, the proxy used for higher spending in the offseason, could be confirmed.

Regression 1 Exhibit 1								
Regression Statistics								
Multiple R	0.700074							
R Square	0.490103							
Adjusted R Square	0.383875							
Standard Error	0.061783							
Observations	30							
Exhibit 2 ANOVA								
	df	SS	MS	F	Significance F			
Regression	5	0.088054	0.017611	4.613675	0.004321			
Residual	24	0.091611	0.003817					
Total	29	0.179665						
Exhibit 3 Regression Results								
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 90.0%	Upper 90.0%
Intercept	1.165117	0.654435	1.78034	0.087685	-0.18557	2.515804	0.045455	2.284776
Average Fights Per Year	-0.000056	0.001465	-0.38101	0.706549	-0.00358	0.002465	-0.00306	0.001946
Average Points	-0.00137	0.002359	-0.57989	0.567395	-0.00624	0.0035	-0.0054	0.002666
Average Goals Per Year	0.002713	0.001366	1.986247	0.058541	-0.00011	0.005532	0.000376	0.00505
Average Age	-0.02228	0.02171	-1.02639	0.31494	-0.06709	0.022524	-0.05943	0.01486
Average Cap Space Available	-0.01573	0.005203	-3.02252	0.005882	-0.02647	-0.00499	-0.02463	-0.00682

Regression 2 Exhibit 4								
Regression Statistics								
Multiple R	0.665593							
R Square	0.443014							
Adjusted R Square	0.401756							
Standard Error	0.06088							
Observations	30							
Exhibit 5 ANOVA								
	df	SS	MS	F	Significance F			
Regression	2	0.079594	0.039797	10.73761	0.000371			
Residual	27	0.100071	0.003706					
Total	29	0.179665						
Exhibit 6 Regression Results								
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 90.0%	Upper 90.0%
Intercept	0.527963	0.236973	2.22795	0.034409	0.041736	1.014191	0.041736	1.014191
Average Goals Per Year	0.002122	0.000995	2.133161	0.042152	8.09E-05	0.004164	8.09E-05	0.004164
Average Cap Space Available	-0.01271	0.004537	-2.80161	0.009289	-0.02202	-0.0034	-0.02202	-0.0034



CONCLUSIONS

With the launch of the NHL's 31st franchise only in its inaugural season, it has not experienced its first offseason where it can improve its deficiencies on and off the ice. Considering the team, the Vegas Golden Knights, is having much success in its inaugural season, they may not have many changes on the ice. Developing and maintaining its fan base is of the utmost importance early in its development. From the findings in this study, it would be wise for the Golden Knights to continue to score more goals by investing in experienced free agents, or draft picks, in the offseason. This is due to the finding that only two factors were related to yielding higher attendance, goals scored per season and average cap space available per season, with each of these being confirmed with adequate probability values. The other factors that were examined in this SIP, average fights, average points, and average age, were all shown to be negatively related to attendance, but with elevated probability value could not be confirmed. It will be interesting to see what the Vegas Golden Knights will do this upcoming offseason on improving its team on and off the ice.

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