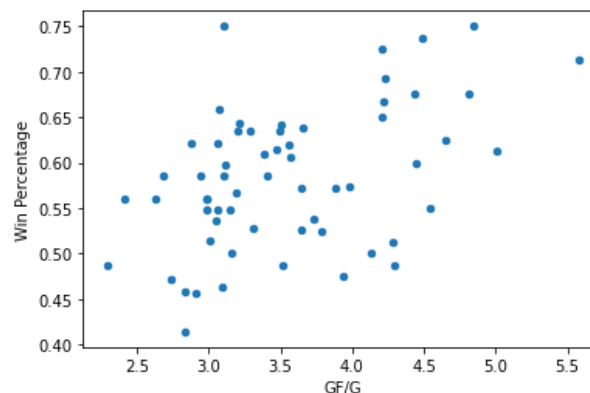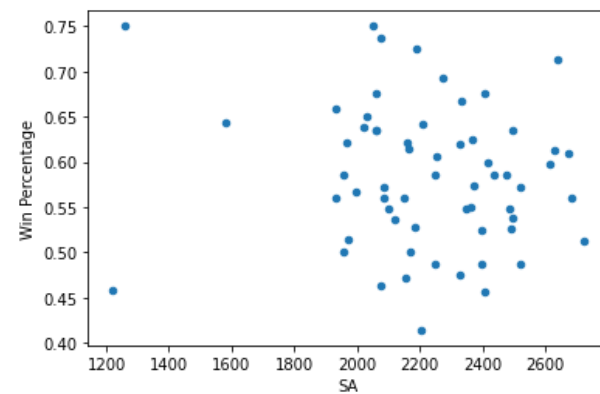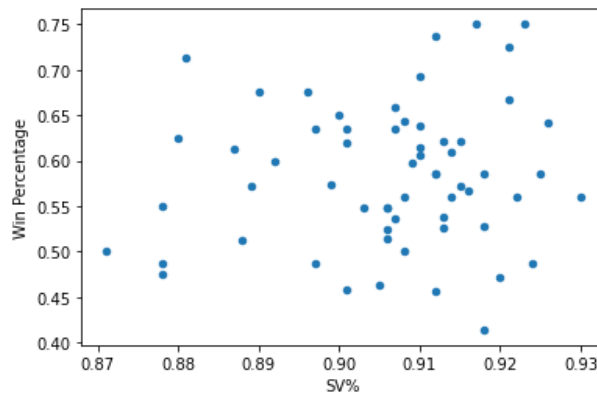RJ Burjek
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Defense Wins Championships

It is a commonly heard phrase in sports today. Defense wins championships. However, it is also a topic that is highly debated, so I wanted to dive deeper into this phenomenon and see if it is true. Does defense actually win champions? Well, in order to test this, I looked at data from my favorite sport and my favorite professional league: the National Hockey League. Starting off, I found a data set of previous Stanley Cup winners and their regular season stats for each year dating back to the 1959-60 season. Next, I broke down teams into three subcategories: offense, defense, and goaltending. I decided that to start off my search, I should keep things simple by just taking a major statistic that falls under each of those categories and seeing if any of those stats correlated to a team's win percentage. The goaltender's job is to stop the puck, so I decided to use Save Percentage because that statistic is able to demonstrate how often a team's goalies were able to stop the puck throughout the season. The defense's goal is to stop the other team from being productive on offense, so I used Shots Against as a representation of how much that team allowed their opponent to produce on offense. Lastly, the offense's purpose is to score goals in order to win games, so I used Goals For per Game to show how productive a team truly was throughout the duration of their season. Pictured below are the graphs of Save Percentage vs. Win Percentage, Shots Against vs. Win Percentage, and Goals For per Game vs. Win Percentage.

In the first two graphs, it seems as if there is no correlation, but in the third graph, there seems to be an upward trend. This can allow one to come to the conclusion that it is the offense that has the biggest impact on a team's win percentage rather than the defense or goaltending, and it is indeed the offense that contributes more to a team's overall success.

Having discovered this, I decided to take my research one step further. I wanted to use this information to take multiple offensive statistics, see how much they impact a team's overall success, and use that information to predict which current NHL team will end the season most successfully based on their current offensive production. I began by picking my offensive test statistics. I ended up choosing Goals For per Game, Total Goals, Total Shots on Goal, and Shooting Percentage. Using these statistics, I created a multiple linear regression and found an equation I could use to predict a team's winning percentage at the end of the year. Before that, however, I found every team's current win percentage and found the top five teams in the league.

	Team	AvAge	GP	W	L	OL	PTS	PTS%	GF	GA	...	SHA	PIM/G	oPIM/G	S	S%	SA	SV%	SO	Current Win Percentage
0	Florida Panthers	27.3	24	17	4	3	37	0.771	92	65	...	3	8.3	9.8	881	10.4	746	0.913	0	0.708333
3	Minnesota Wild	29.1	24	17	6	1	35	0.729	89	70	...	0	10.6	9.7	820	10.9	742	0.906	0	0.708333
5	New York Rangers	26.3	23	16	4	3	35	0.761	67	57	...	1	9.3	9.1	652	10.3	734	0.922	2	0.695652
7	Carolina Hurricanes	27.9	23	16	6	1	33	0.717	75	52	...	2	9.6	8.1	770	9.7	634	0.918	1	0.695652
8	Edmonton Oilers	28.3	23	16	7	0	32	0.696	84	70	...	0	8.6	7.0	730	11.5	788	0.911	0	0.695652

Based on current win percentage, the top five most successful teams at the moment are the Florida Panthers, the Minnesota Wild, the New York Rangers, the Carolina Hurricanes, and the Edmonton Oilers. After this, however, I used the multiple regression equation I had derived, applied every team's current statistics in those four offensive categories I used, and found every team's projected win percentage. These were the results.

	Team	AvAge	GP	W	L	OL	PTS	PTS%	GF	GA	...	SHA	PIM/G	oPIM/G	S	S%	SA	SV%	SO	Current Win Percentage	Projected Win Percentage
0	Florida Panthers	27.3	24	17	4	3	37	0.771	92	65	...	3	8.3	9.8	881	10.4	746	0.913	0	0.708333	0.643973
19	Colorado Avalanche	27.7	21	12	7	2	26	0.619	84	71	...	1	9.6	12.8	691	12.2	634	0.888	0	0.571429	0.619550
3	Minnesota Wild	29.1	24	17	6	1	35	0.729	89	70	...	0	10.6	9.7	820	10.9	742	0.906	0	0.708333	0.616436
8	Edmonton Oilers	28.3	23	16	7	0	32	0.696	84	70	...	0	8.6	7.0	730	11.5	788	0.911	0	0.695652	0.595439
1	Washington Capitals	28.7	25	15	4	6	36	0.720	88	61	...	3	6.3	7.6	772	11.4	697	0.912	4	0.600000	0.583741

Three of those top five current teams remained, but the Colorado Avalanche and Washington Capitals jumped into the projected top five. Those two teams may not be among the top right now, but based on the offensive numbers they are putting up, they have the ability to be one of those top teams in the league by the end of the season. If offense truly is the biggest key to success, then these are the five teams that should end up at the top of the league by the end of the year.

Bibliography

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