Goal scoring analysis based on team level in National Hockey League in the season 2006/ 2007

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The purpose of this thesis is to determine how top ranked teams score differntly from other teams. In ice hockey the aim is to score more goals than the other team in order to win hockey games.

The thesis examines the differnces in goal scoring on a team level. Therefor the goals of the 2006/2007 season of National Hockey League were collected and categoriezed by predetermined and approved variables. The teams were combined into three groups: Top- , middle- and bottom ranked teams.The groups were based on the position of the final ranking. All the scored goals of each group were analized by the statistics grogramme SPSS 17.0.

The differnces of the resultsfor the three groups are all close by.The results of top ranked teams have narrow differnces in the reasearched categories.
The results show that the top team have high scoring centers. Furthermore top ranked team score about 27.3 percent of all their goal on power- play situations. Also top teams compared to the other two goups score more often from a breakout started in the defensive side of the ice.

Even so the top teams are not leading in every category of the analysis variables. Top teams are always close to the lead in all examined categories.

Keywords
Ice hockey, scoring analysis, team level

Table of content

1   Introduction

In each ice hockey season there is a new champion in the NHL, a team that qualified for the play- off and made its way through into the final. Each season we have a Stanley cup winner, obviously the cup winner and the other play- off contender win more games than the other teams. There are 30 teams in the National Hockey League, the highest club hockey level on the planet. The most skilled players play in this league.

Only one team will finish first place. So in order to be the first placed team, teams need to win and in order to win the teams score goals because that is the way how in hockey a winner is determined. The team with the most goals in the end of the game will earn the full amount of points. A victory counts two points in the NHL. Losing counts no points. If game is tied in after sixty minutes. The teams get one point even though the winner is determined by overtime goal or shootouts win. The final ranking of the season is based on how many points the teams won throughout the season. The winnings are based on the goals the teams scored. So the goals can influence the ranking.

Ice hockey is a classical invasion game. Invasion games are defined as team games with the purpose of scoring points while invading and preventing the opponent from scoring. This is with a fix time limit. Ice hockey is a team sport in which six players are on the ice at the same time. The game is played on ice surface and the aim of the game is to score more goals than the other team.

Each team has different players, coaches and styles to play the game, but still the aim of the game is the same to score goals. What do they do differently in the scoring? What qualities need a team that is among the top ten teams of the NHL?

The purpose of this thesis is to determine if top teams score differently than the other teams and in which categories the top teams are the leading. I hope to find the differences and to be able to tell how a team needs to score if it wants to be a top team.

In previous work shop classes, students under the supervision of Mika Saarinen categorized the goals of the 2006- 2007 National Hockey League season.

I want find answers about how the team score, where potential differences are and what need a top team in order to be a top team.

2   Literature Review

There have been studies made previously on the game of hockey. These studies for example focused on aspects of goal scoring. In the following there are some of aspects of scoring further explained.

2.1   A short introduction about the history of NHL

Professional ice hockey has a long history in North America. The National Hockey League was founded in 1917. Back in those days, the league consisted of only five or six teams, depending how many teams could be build during that time. The time from 1917 until 1942 is known in the NHL as the founding time. In 1924 the Boston Bruins joined as first American team, two years later the Chicago Blackhawks, Detroit Red Wings and the New York Rangers followed. During 1942 and 1967 only six teams were playing in the NHL. These teams were the Boston Bruins, Chicago Blackhawks, Detroit Redwings, Montreal Canadians, New York Rangers and the Toronto Maple leafs. This time is referred as the original six. A lot of changes happen during this period of time. The first superstars of hockey emerged like Maurice Richard, The first player who scored 50 goals in 50 games. And Gordie Howe started to play his first NHL game on March 28th, 1950. From 1967 on, the NHL started an expansion. The time of the expansion continued until 1992. New teams were building like California Seals, Minnesota North Stars, Philadelphia Flyers and the Pittsburgh Penguins and St. Louis Blues. Later on in 1978 the California Seals would merge into the Minnesota North Stars. Further expansion team came with Vancouver Cannucks and Buffalo Sabres in 1970. Also in the seventies the Atlanta Flames, which were relocated to Calgary, and the New York Islanders, Kansas City Scouts, which became the Denver Rockies which would relocate to New Jersey Devils, came as new teams in the NHL. In 1972 a different problem appeared for the NHL. The World Hockey Association (WHA) was founded. Already in 1979 the rival league had to fold and four teams merged into the NHL. These teams were the Hartford Whalers, Edmonton Oilers, Quebec Nordiques and the Winnipeg Jets. And even after 1992 in the modern day area the NHL expanded up to the 30 teams until the year 2000. It started with Tampa Bay Lightning, Ottawa Senators and Mighty Ducks of Anaheim and the Florida Panthers. In 1993 the Minnesota North Stars were relocated to be the Dallas Stars. In the season

of 1994 and 1995 the first look out accord in the NHL history and it lasted 104 days. The reason for the lock out was a disagreement of the Collective Bargaining Agreement. The season schedule was reduced from 84 games to 48 games. In 1995 the Quebec Nordiques teams got relocated to Denver in order to be the Colorado Avalanche. In 196 the Winnipeg Jets relocated to Phoenix to be the Phoenix Coyotes and in 1997 the Hartford Whalers became the Carolina Hurricanes. Therefore only the Edmonton Oilers are still playing where they were found as WHA team. All the other three WHA got relocated during the time. In 1998 the Nashville Predators were founded and in 1999 the Atlanta Thrashers. In the year 2000 the team in Columbus Blue Jackets and the Minnesota Wild was newly founded. Since, there are 30 teams playing in the NHL. Another great moment was the retirement of one of the best players in hockey. On April 16th, 1999 Wayne Gretzky retired as player with 61 NHL records and being the all- time scoring leader.

In the season of 2004- 2005 another lock out happened and this time the NHL had to cancel the play. It changed the rules in the NHL. (Wikipedia History of NHL)

2.2 Field positions

In ice hockey there are five field positions. There is the center position, the player who takes the face offs and mostly plays in the middle lane of the ice. The winger position plays in the attacking only side lane on the ice. There is a left winger and a right winger at the same time on the ice. The last position is the defender, whose role is to defend his own net against the opponent's wingers and centers and in the attacking game they support from the blue line. (IIHF rulebook, 2010, 35)

2.3 Power play

According to Mensonen and Salo about 60 percent of all goals are scored on even strength. Teams score about 33percent of their goals in power plays and only 4 percent of the goals are scored shorthanded (Mensonen and Salo, 2008, 27). Already Björn Kinding the Swedish coach and hockey research stated in his work the objective power play that good power play equals a good and vice versa. Kinding stated in his research that 28percent of the goals are power play goals.

Since power play situations don't occur to often it is important for the teams to score in this situation and thus have a high power play scoring percentage (Mensonen and Salo, 2008, 27).

2.4   Puck possession

It is important in hockey to have the puck since the purpose of the game is scoring goals. "Puck possession is the contact with the puck"-(Kinding1991, 1) Gaining the puck simply means that the teams get in possession of the puck.
Sumkin's and Vourinen study of the 2003 ice hockey World Championships shows that the most effective area to get into puck possession is the defensive zone followed by the offensive zone.

Menson and Salo also investigated this part in their study on the 2005 ice hockey World Championship and the 2006 Olympic Games. Their results show that high area in the offensive zone is the best part followed by the low area in the defensive zone and the high area in the defensive zone.

Generally the three big zones -defensive, neutral and offensive zone - broken down into the defensive zone low, defensive zone high, neutral zone defensive side, neutral zone offensive side, offensive zone high and offensive zone low.

"Physical contact with the puck just means puck possession" (Kinding 1991, 1).The way of establishing contact with is the way of gaining puck possession.

Menson and Salo analyzed in their study of the 2005 World Championships and the 2006 Olympics the goal and came to following results. During the 2005 World Championships, the three most effective ways to gain possession prior to scoring were: by intercepting passes (21.2%), by stealing the puck from the opponent (17.6%), and off of face-offs (16.1%).

During the Olympics a year later the most effective ways of achieving puck possession prior scoring were stealing the puck (22.8%), off of face-offs (22.3%), and by recovering

pucks shot out of the defensive zone (14.6%) while intercepting passes came close with 13.6 percent(Menson and Salo, 2008, 30).

2.5   Passing

Passing the puck is the movement of the puck from one player to another from the same team. It helps to maintain the puck possession of the team. Passing creates the fastest possibility to move the puck on the ice. It also brings the biggest risk of losing the puck because it moves unprotected over the ice after being released from the stick blade. The number of passes shows how well a team can handle the puck. Passing allows creating scoring chances but has the risk of losing the puck easily. A second thought is that a shoot after a pass is hard to stop the shoot for the goaltender, because of the lateral movement by the goalkeeper (Saarinen, 1992).

2.6   Transition game

The transition game is built on the transition, the importance of it and the organization of the opponent.

2.6.1   Transition

Transition in hockey means changing from offensive into defensive position. The direction of the puck carrier is a vital component of the game of hockey (Kinding, 1991, 3, 9). It is so important because it determines the time of the break out and therefore the time of transition. Kinding further states in his research that going backwards in hockey decreases your scoring chances (Kinding 1991, 3)
In the study conduct by Mensonen and Salo the most successful direction for scoring is forward/ towards the opponent net by 61%. From the second option going sideways only 22% of all goals were scored and 17% of the goals were scored from going backwards or stop (Mensonen and Salo 2008, 6).

2.6.2   Importance of the transition

The duration of the attack is a sign of the importance of transition. The first part is from zero to five seconds Kinding describes that as 1st class scoring chance, the second part is from five to ten seconds is described as 2nd class scoring chance. These two categories lead to goal scoring based on transition (Kinding, 1991, 6)

2.6.3 Organization of the opponent

The defensive readiness of the opponent when starting the attack describe how organised to defend the opponent is. The defensive readiness is based on three types: At first the counter attack when the opponent is unorganized. The second type is the fast break when the opponent is organized, so the situation is even strength. The third type is a slow break out when the opponent is organized. Mensonen and Salo found out the most effective situation is the slow attack against an organised defence with 49.9% success rate followed by the counter attacks when the defence is not organised with 31.3% and 18.4% of the goals scored on the fast break against an organised defence. (Mensonen and Salo, 2008, 33)

2.6.4 Crossing the Blue Line

Crossing the opponent's blue line is a vital step in attacking plays. It is the area where teams want to be in control of the puck and also want to outnumber the opponent in this area. In hockey it is called overloading the blue line. The teams try to outnumber their opponent's in order to have the man advantage to have a higher on scoring. Mensonen and Salo's study show that most goals are scored in the even situation on the blue like 1 versus 1 or 2 versus2 etc , they found out that 53.9% of the goals in the Olympics2006 and 36.4% of the goals during the 2006 World Championship were scored after the even situation on the blue line followed by the 2 versus 1 during the Olympics with 6.3% and 2 versus 0 during the World Championships 2006, in third place the goals are scored from a 1 versus 0 situation during the Olympics with 5.8% and the 2 versus 1 situation during the World Championships with 5.5%.(Mensonen and Salo, 2008, 36, 37)

2.7 Area of the ice

In modern ice hockey the offensive zone is virtually divided into six parts. These parts relate to the shooting angle and the distance from the goal. In modern hockey there is the crease area (1), the area at the face- off circle (2), the big circle (3), inside the attacking triangle (4) outside the attacking triangle (5) and behind the blue line (6) as illustrated in figure 1.
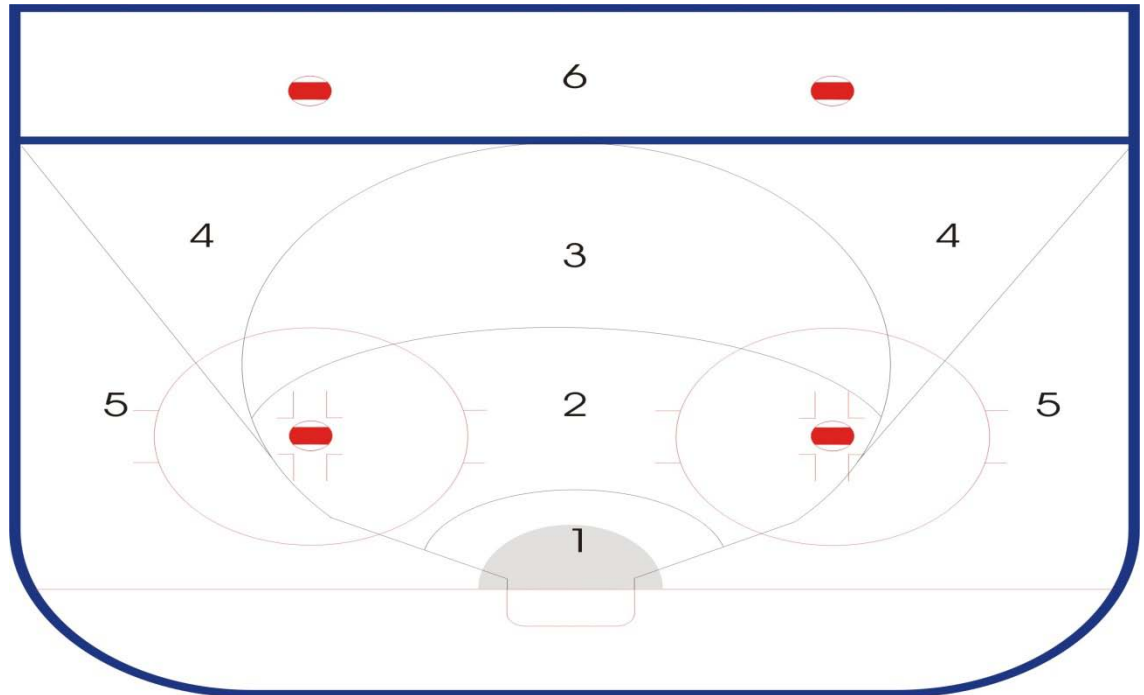
Figure 1. Scoring Area Figure (Mensonen and Salo, 2008 ,39, 40)

The idea of a scoring circle goes back to Mikkola in 1987 were as the circle can be divide into three parts. The parts are divided by technique. Part A is the most suitable to score with a slap shoot, part B provides most scoring chances by using the wrist shoot and part C is most suitable to score on rebounds, one- timers or deflection as it is shown in figure 2.
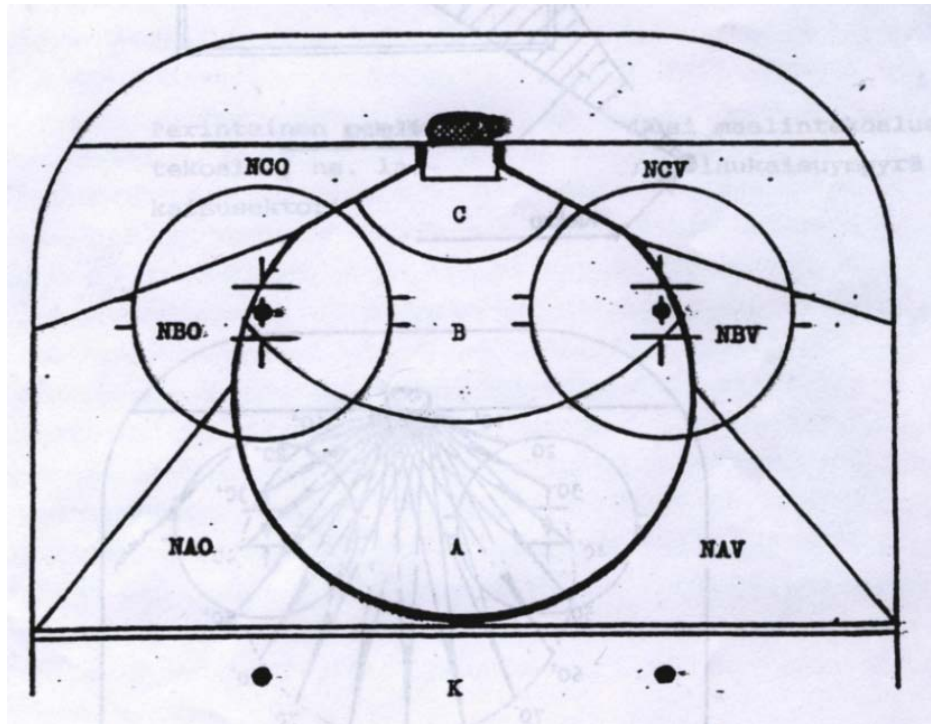
Figure 2. Area of shots (Thusberg, Mikkola 1985, 5)

In Sumkin and Vourinen (2005, 9) study of the 2003 World Championships shows that 57.3% of the goals are scored in the crease area or area number one.29.5% of the goals are scored from the second area / at the face-offs circle and 8.5% of the goals are scored from the 3 area the big circle and only 4.6% are scored outside the attacking triangle as it is shown in figure 3.
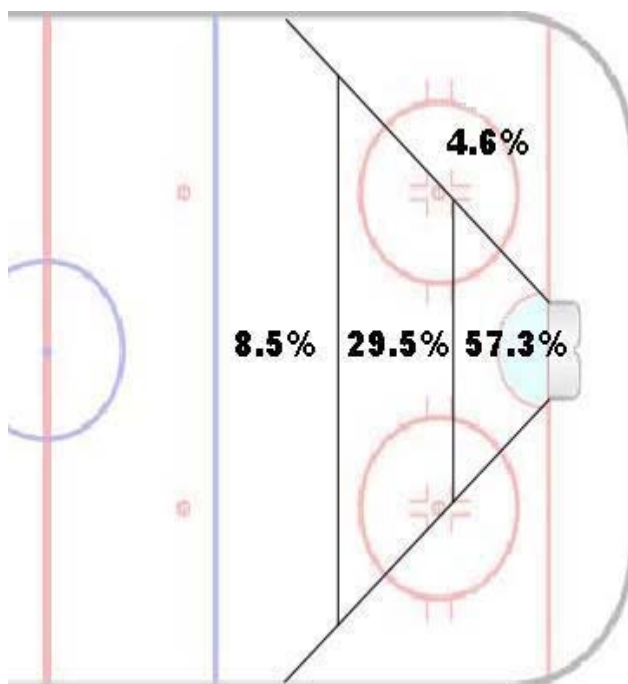
Figure 3. Scoring area (Sumkin & Vuorinen, 2005, 37)

In the study of the 2005 Olympic Games and the 2006 World Championships done by Mensonen and Salo, the crease is still the most important area of goal scoring and followed by the area at the face-off circle and the big circle. The figure 4 also shows that more goals are scored within the attacking triangle than outside the attacking triangle.
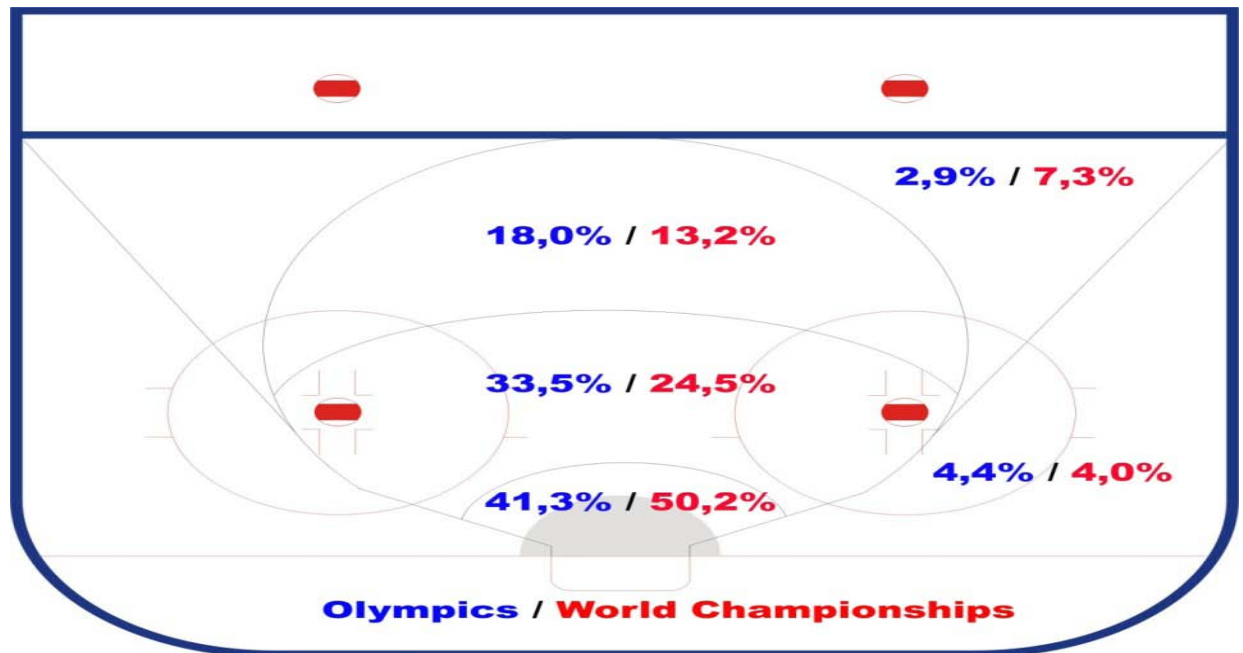
Figure 4. Scoring Area Percentages from 2005 World Championships and 2006 Olympics (Mensonen and Salo, 2008, 39)

2.8   Scoring technique

In ice hockey several techniques can be used to score. Shooting the puck is one of the basic skills. In order to score players need to shoot. The different styles of the shot are dekes or breakaways, wrist shots, back hand shots, slap shots, tip ins and other mixed forms. Shooting in ice hockey is produced by shifting weight from the one leg to the other; this energy is transferred through the middle body into arms onto the hockey stick. A firm grip, a strong push into stick and a follow- through help to maximize the power of the shot.

2.8.1   Wrist shot

With a wrist shot the puck has contact with the stick blade at all time. The movement of the wrist starts behind the shooter's body and finishes in front of the shooter's body during the motion the body covers/ presses on the stick. The shooting motion is finished after the puck is released from the blade and the stick motion is followed through with a wrist turn. (Korpi- Välivouri 1976)

2.8.2 Backhand shot

The Backhand shot characteristics are that the shooters faces the target with his back and the puck lies on the back hand side of the stick. During the weight transfer from the rear leg to the front leg the puck moves along the blade until it is released. The body follows the puck. (Korpi- Välivouri 1976)

2.8.3 Slap shot

Slap shots can gain incredible high speed. The slap shot is generated by raising the stick up to shoulder level and bringing the stick down again, the blade hits the ice about ten centimetres before the puck. The full weight is slapped into the stick while the puck is released and the stick follows through. With this technique the in Sumkin and Vourinen's study 14 percent were scored and in Mensonen and Salo's study a combined of 24.9 percent. (Sumkin and Vourinen, 2005, 37) and (Mensonen and Salo 2008, 41)

2.8.4 Tip in

A tip in is performed by deflection or redirecting a puck past the goaltender into the net. During the World championship of 2005 4.4 percent of all goals were scored by tip ins and during the Olympic games 2.4 percent (Mensonen and Salo, 2008, 41).

2.8.5 Deke or breakaway

The deke or breakaway refers to the situation in which the player maintains puck possession while out- skating the opponent or goaltender. In order to deke successful the deke needs time and space in order for the opponent to go for the puck before the

players move it to the intended place. The players need to consider timing and distance as well as potential weaknesses of the opponent. Dekes can be transformed in any combination according to the situation.

In Mensonen and Salo's goal scoring study the results of 9.1 percent of the goals were scored by dekeing or breakaway. (Mensonen and Salo, 2008, 41)

2.9   Release of the shoot

The circumstances in the game of hockey require that shooting techniques cannot be used correctly or fully. Therefore the releases of the shoots are initiated in different kinds.

The different types were distinguished by their release from the stick. The one timer shot is the quickest way of scoring (since the puck gets only one contact at the shooting motion) followed by the receipt of a pass and shoot, the third quickest being receiving a puck with a short puck control and then shot. The three slower options are puck control followed by a shot, a breakaway or a walk out.

The time of the release is crucial because the longer it takes to place a shot the longer time the goaltender has to prepare for it. (Brown and Stenlund 1997)

Shooting off a pass, forces the goaltender to work on two ends. He has to prepare at first for the opponent with the puck than follow the pass and be ready to take the shot from the second shooter. This is why one time- shots are effective in scoring.. (Westerlund 1992 and Saarinen 1992)

Another point is that the greater the distance the pass covers, the wider the angle to the goal from the passer to the shooter the more the goaltender has to move laterally (Westerlund 1992).

Mensonen and Salo also found that in both the 2005 World Championships and the 2006 Olympics combined- 40.5% of all goals were scored using one-time shots-.24.0% after received a pass and shoot, 15.0% receive the puck with a short puck control and shot, 7.1% of the goals were scored on puck control and then a shoot, 9.0% were scored on the breakaway.

A total of 79.5% of all goals scored in both events together are scored on a quick release. (Mensonen and Salo, 2008, 42)

2.10   Target area

The areas of the net which cannot be cover by the goaltender are divided into the blocker side and the clove side. As a result we have a low blocker or a low glove and a high blocker or a high glove. The only exception is the five whole between the legs of the goaltender.

Sumkin and Vourinen conducted a study on the 2003 World championships switching the scoring area figure from the traditional five whole concept to a nine whole figure (figure 5) with the conclusion that 59.8% percent of all goals were scored down low.
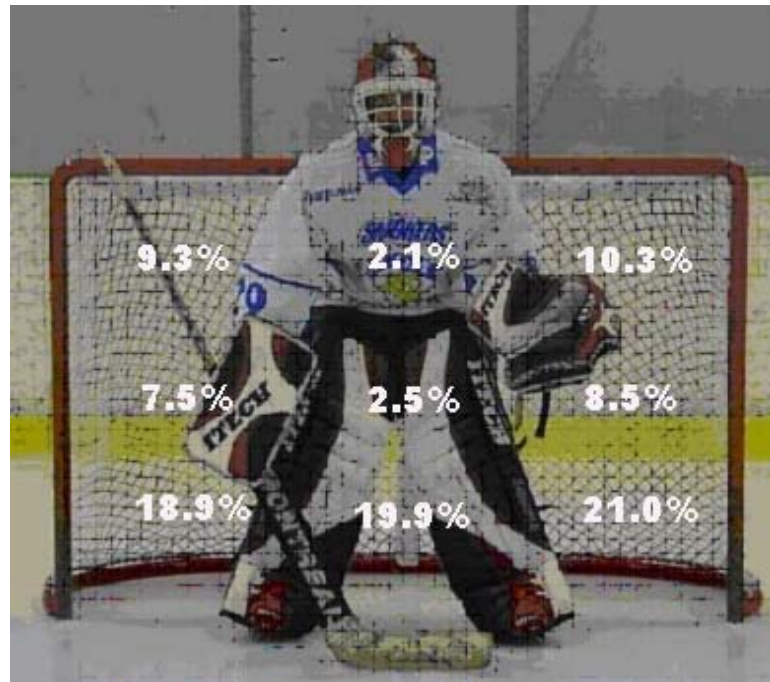
Figure 5. Placement and scoring chart used to track goals scored in 2003 World Championships (Sumkin and Vuorinen, 2005, 31)

So in 2008 when Mensonen and Salo did their research of the 2005 World Championships and the 2006 Olympic Games switched back to the old five whole figure (figure 6.) with the confirmation that 58.4% of all the goal in the two events were scored low.
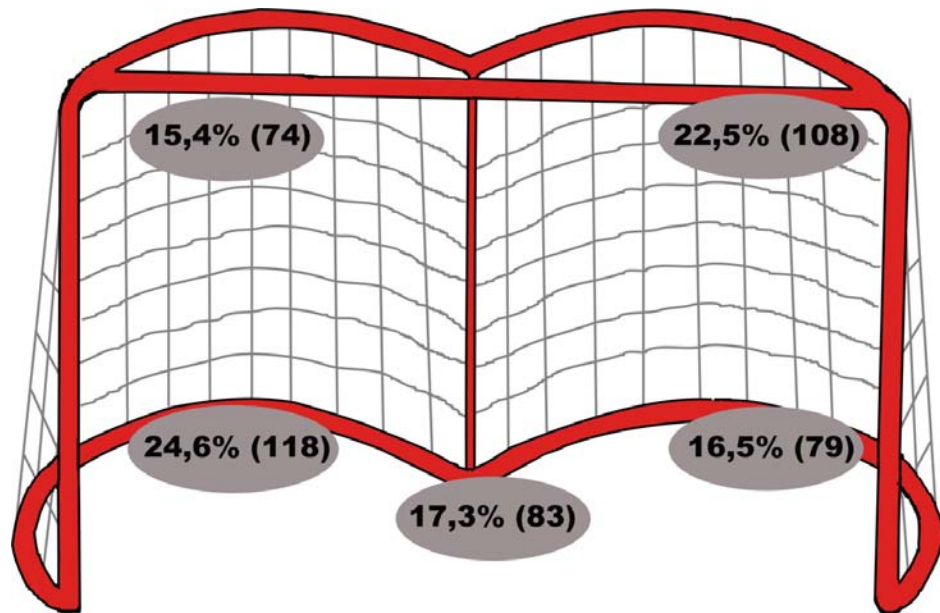
Figure 6. Scoring chart and placement of goals from the 2005 World Championships and the 2006 Olympics (Mensonen and Salo, 2008, 44)

2.11 Scoring support

Supportive action on the goal means what help to score a goal. The main action is rebounds. Kari Savolainen researched the Finnish league Sm-Liiga during the 2009-2010 season and he found that during all direct attacks 16 percent of the goals were scored on rebounds and with end zone play even 17 percent were scored on rebounds. (Kari Savolainen, 2010)

3   Research Problems

Which are the differences in goal scoring between top, middle or bottom ranked teams and which parameters are more important to be a top ranked team?

Do the top ranked teams lead in all categories?

4   Research methods

For this analysis the data used is from the National Hockey League season 2006- 2007, in which all regular and play- off goal was collected. The data was compiled by a group of former Degree- Programme students under supervision of Mika Saarinen in the hockey workshop of the course. The goals were collect from the NHL.com website and the video clips. In total there are 7721 goals from all 30 teams from the NHL during one season.

In order to keep track with goals and to identify the potential strength and weakness of teams the goals will be categorized. Furthermore this study will analyze the patterns of goal scoring based on the end results of the final ranking of the season. The teams will be categorised into top, middle and bottom ranked groups. The top group is based on the ranking first place until 10th place, the middle ranked group ranks from 11th until 20th place and the bottom group is ranked from 21st place until 30th place. The groups will be compared by category. The categories are proven factors in the game of hockey.

4.1   Study design

Since the data was already collected and categorized with previous effective parameters. The parameters are: amount of goals, time of the game, strength, 1st goal, importance of the goal, position, handed, area team gains possession of the puck, way of puck possession, direction of the attack, defensive readiness, duration of the attack, number of passes, situation crossing the blue line, scoring area of the ice, technique used on scoring, way of scoring, area of the net and supportive action.

 I divided the 30 teams and their goals into three groups based on their place in final ranking of the 2006-2007season (table 1).

Table 1. Teams divided in the three groups

Top ranked teams	Middle ranked teams	Bottom ranked teams
Buffalo Sabres	Minnesota Wild	Florida Panthers
Detroit Red Wings	Atlanta Trashers	St. Louis Blues
Nashville Predators	Calgary Flames	Boston Bruins
Anaheim Ducks	Colorado Avalanche	Columbus Blue Jackets
San Jose Sharks	New York Rangers	Edmonton Oilers
Dallas Stars	Tampa Bay Lightning	Chicago Blackhawks
New Jersey Devils	New Yorkl Islanders	Washington Capitals
Vancouver Cannucks	Toronto Maple Leafs	Los Angeles Kings
Ottawa Senators	Montreal Canadians	Phoenix Coyotes
Pitsburgh Penguins	Carolina Hurricanes	Philadelphia Flyers

After dividing the groups I analyzed each group and compared the results according to each variable. The variable list is seen in table 2. In order to be able to make a comparison I compared relative values in the percentage of the category not the absolute values.

Table 2. List of variables

Variables	Categories
amount of goals	total amount of goals
time of the game	the game time divide into five minute frequencies
strength	equal strength, power play, power play +2, shorthanded -1
	and shorthanded -2
	6 v.5 team with added attacker scores
	6 v 5 team without added attacker scores
	Shootout
	Power play empty net
	Short Handed empty net
1st goal	yes/ no
Importance of the goal	Game winning goal,
	Going ahead by +1, going ahead +2
	tying goal, bringing within -1
position	Center, right wing, left winger, defence
handed	left/ right
area team gains possession	Unable to tell,Defensive zone down low
of the puck	Defensive zone middle, defensive side in the neutral zone

	offensive side in the neutral zone,
	Offensive zone middle and Offensive zone down low
way of puck possession	Unable to tell, face off, steal the puck,
	intercept a pass, opponent makes a mistake,
	Shot out of defensive zone, Shot out of neutral zone,
	After Shooting / rebound, Lost puck,
	Shootout/ penalty shoot
direction of the attack	Unable to tell, forward/ towards opponents net
	sideways, backwards or stop
defensive readiness	Unable to tell, Counter attack
	when the other team isn't organized, fast break when
	opponent is organized(even strength situation)
	Slow attack when opponent is organized
duration of the attack	Unable to tell, 0-5 sec;5-10sec;
	10- 15sec;15 -20sec;>20 sec; shootout / penalty shoot
number of passes	0;1;2;3;4;5 or more ; unable to tell
situation crossing the blue line	1v.0 or 2vs0
	2s.1
	3v.2 or 3v.1
	1v.1 or 2v.2 or 3.3
	unable to tell
	odd man rush (underload)
scoring area of the ice	Unable to tell,Crease, At the face off circle,
	Big Circle, Inside of the attack traingle
	outside of the attack traingle, area 6, area 7
technique used on scoring	Unable to tell, deke or breakaway
	wrist shot, backhand, slap shot, Tip in, other
way of scoring	Unable to tell, one timer shot(*Tip),
	recieve a pass and shoot, recieve the puck,
	short puck control and then shot; Breakaway;
	Walk out; other
area of the net	Unable to tell, low blocker,
	low glove, high blocker, high glove, five- hole
supportive action	Unable to tell, rebound, tip, own net,
	Direct goal on net/ no supportive action

4.2   Data Collection

All scored goals from the regular season and the playoffs were collected, by watching

the goals from NHL.com or on DVD and then the goals were sorted into the different

categories and their parameters. If it was impossible to determine the settings of the goals it was labelled as unable to tell.

4.3   Data analysis

The collected data is run through the statistics programme SPSS statistics program of the version 17.0. I analyzed each group with each variable and compared frequency and percentage. I try to find results that show a pattern on the scoring of top teams.

5   Results

The 7721 goals of the NHL season 2006/ 2007 of all 30 teams are divided into 3 groups. The three groups are top ranked teams, middle ranked teams and the bottom ranked teams. The groups are analyzed by 18 variables to find out differences in goal scoring on team level.

5.1   Amount of total goals

The top ranked teams scored all together 2900 goals which are 37.6 percent of the total goals. The middle ranked teams score 2653 goals which are 34.9 percent and the bottom ranked teams score 2168 goals which are 28.1 percent.

5.2   Home/ Away
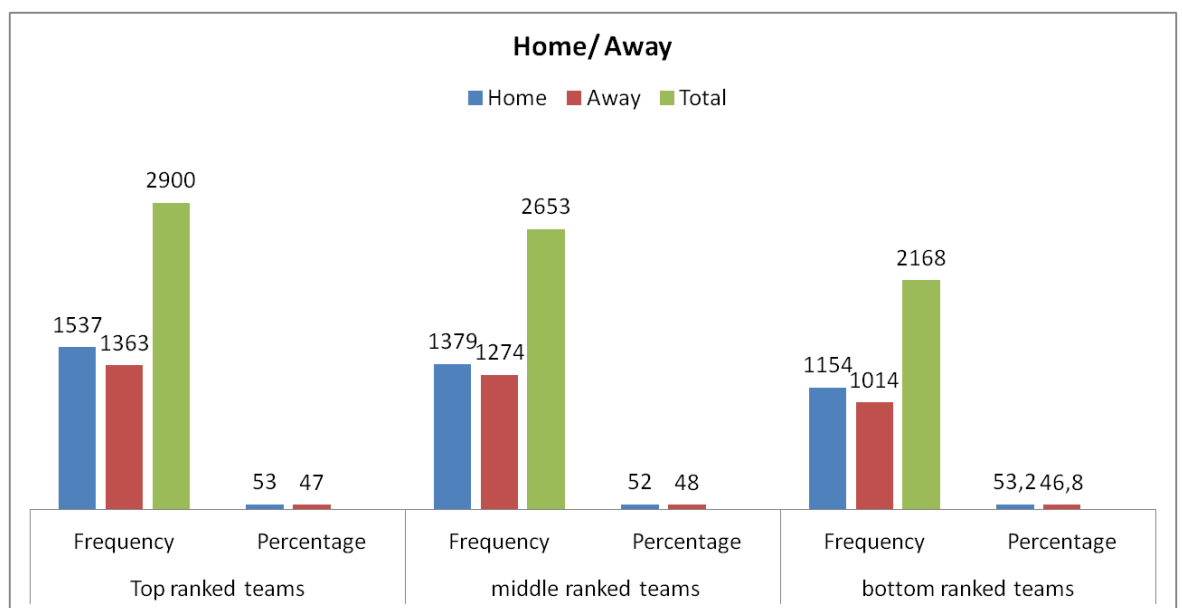
Figure 7. Comparison Home/ away

Apart from frequency the three groups show no significant difference, all groups show that hockey team in the NHL score between four to six point four percent more goals at home ice. These results show as you can see in the figure 7 that being a good road or home ice team adds no significant advantage to being in the top ranking. Teams have to score on both home ice and road games.

5.3 Time

As you can see in following Figures elite hockey teams use every minute to score goals during a full NHL season.
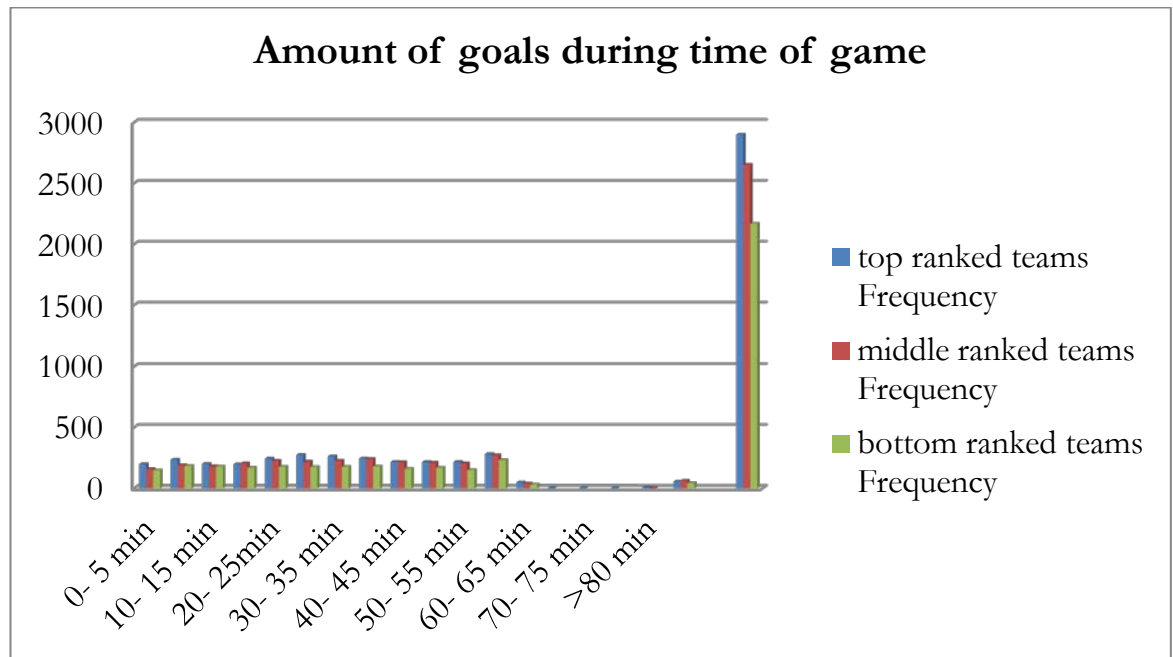
Figure 8. Amount of goals during time of game
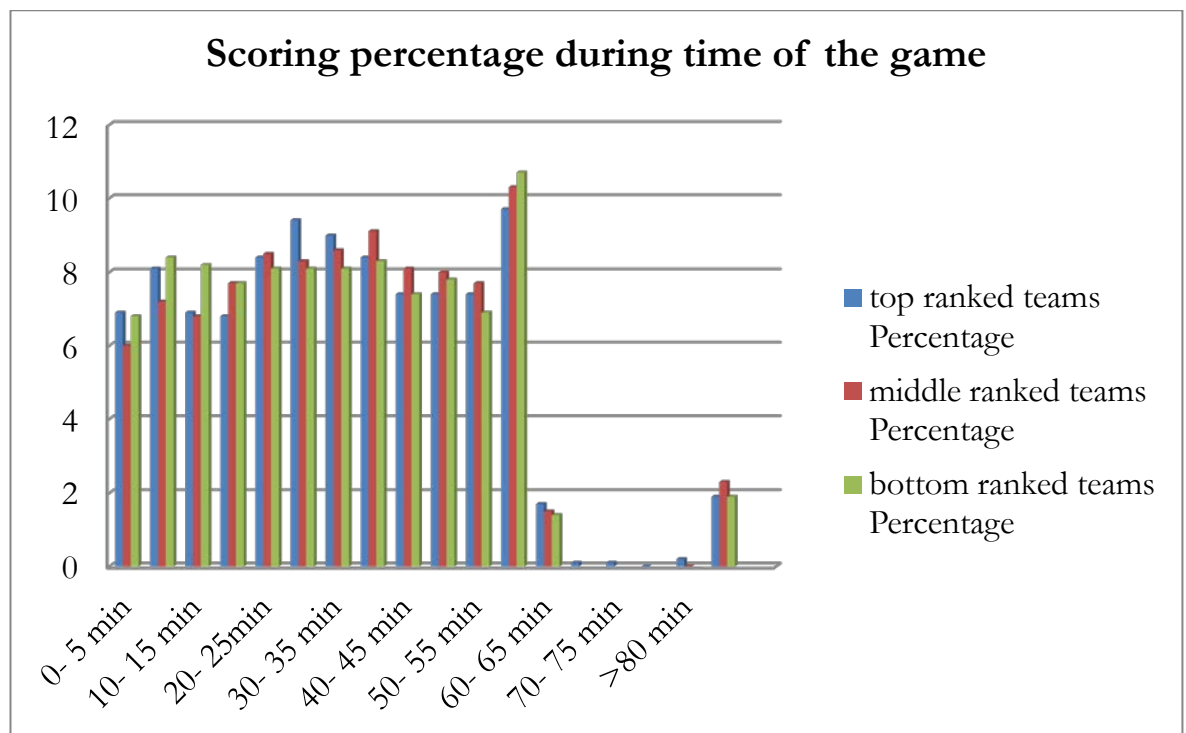
Figure 9. Scoring percentage during time of the game

A clear significance in goal scoring between top ranked teams and bottom ranked teams is bottom score more goals of their goals in the first period especially during the

5th and the 10th minute with 8.4 percent whereas top ranked teams peak scoring during the second period more specific 9.4 percent during the 25th and 30th minute and the 30th and the 35th minute with 9 percent. Another important difference is seen in the last five minutes of the third period. In which the bottom ranked teams score most of their goals in the 55th until 60th minute with 10.7 percent. That is the lead during this time of the game. In general there are no big changes of scoring during the time of the game. The last column of the Figure shows the goals are scored in the shootout. All three groups are closed by two percent. The middle ranked teams lead here in goal scoring with 2.3 percent

The first period is from zero to 20th minutes and the second period starts from 20th to 40th minutes and the third period will go from 40th to 60th minute. Everything after the 60th minute is called overtime.

Time is a limiting factor of a hockey game. Top ranked teams don't have the highest percentage of scored goals during the game but they have the highest steady numbers between the minimum of 6.9 percent and a maximum of 9.7 percent during the game time with the highest percentage of scored goals in the second period of the game. A total of 35.2 percent between the 20th and 40th minute of the game are scored by the top ranked teams.

To be a team in the top group, place 1to 10 in the NHL, teams need to score about 35 percent of their goal in the second period and they need to be steady goal scores during the time of the game

5.4   Strength
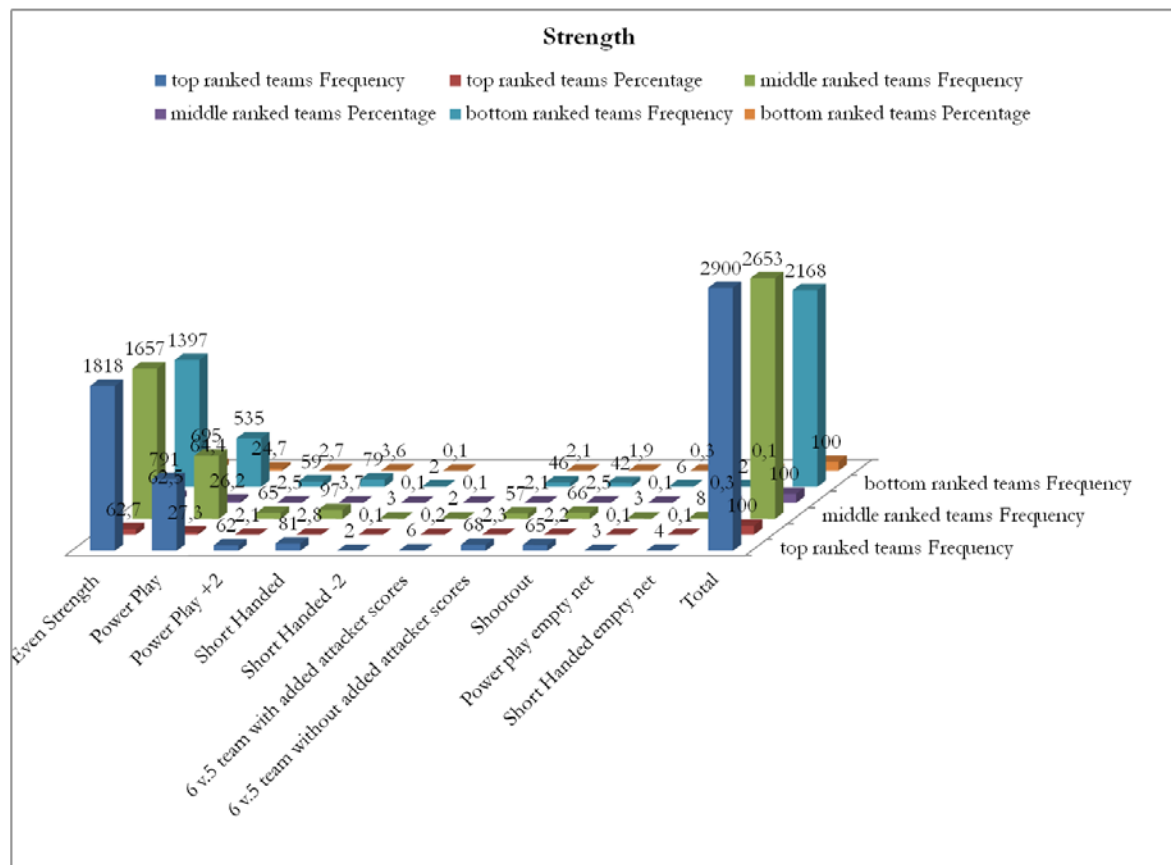
Figure 10. Strength of the team

Top teams score 62.7 percent at even strength and 27.3 percent of all goals on power play, but only 2.1 percent on power play +2 . 2.8 percent of all goals were scored in a short handed situation and 2.3 percent are scored on a 6v.5 without the added attacker strength situation on the ice. Whereas 0.2 percent are scored on the 6v5 situation with the added attacker and 2.2 percent were scored on a shootout situation during the game.

Middle ranked team of the NHL score 62.5 percent on a even strength situation out on the ice. 26.2 percent are scored on a power play and only 2.5 percent are scored on the power play +2 situation. 3.7 percent of all goals from middle ranked teams are scored short handed. 2.1 percent are scored on the 6v.5 situation without the added attacker and 0.1 percent are scored with the added attacker. During shootouts 2.5 percent of the goals are scored.

Bottom ranked team in the NHL score 64.4 percent of all goal on even strength and 24.7 percent on power play. On the power play +2 bottom ranked teams score 2.7 percent and 3.6 percent are scored short handed. The teams scored 2.1 percent of the

23

goals on the 6v5 situation as the team without the added attacker. They also score 1.9 percent on shootouts.

5.5 1st Goal
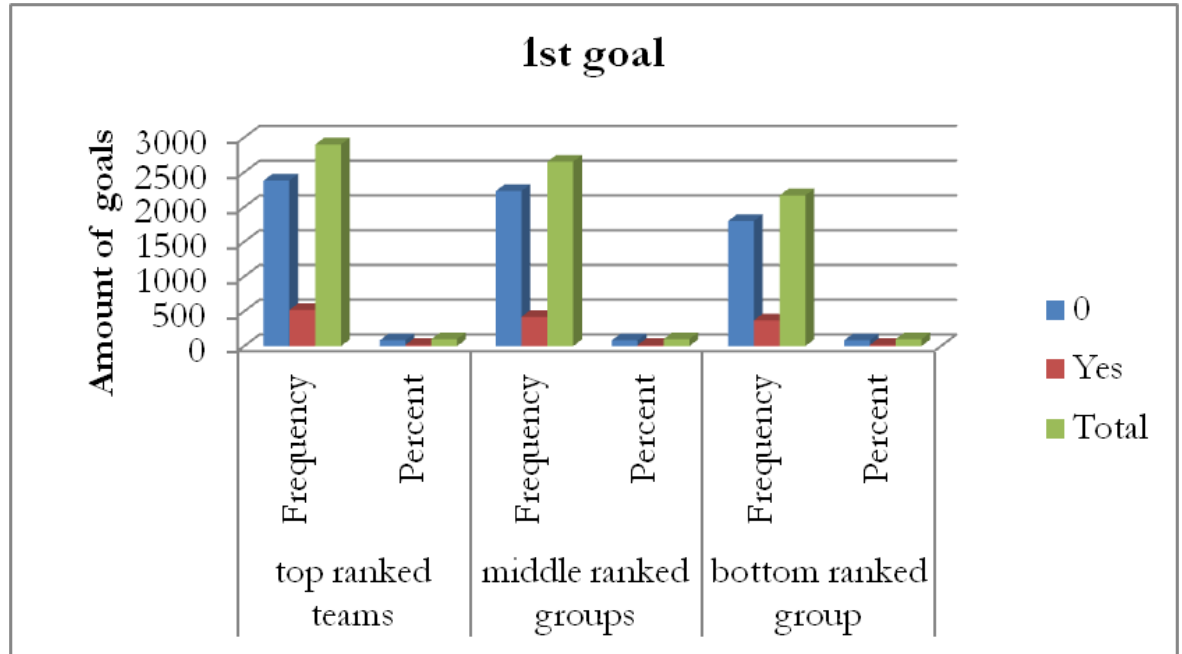
Figure 11. First goal

Top ranked teams score 17.9 percent as first goals out of their total goals during the season.15.9 percent of the total goals are first goals for middle ranked teams. Bottom teams score 17.1 percent of out of their total goals as first goals.

Scoring the first goal can be vital in the game for the confidence of one team but the results show clearly there is no significance in scoring the first goal and the end ranking in the league. Top ranked and bottom ranked teams have almost the same percentage around 17 percent; only the middle ranked teams fall short with 15.9 percent.

5.6 Importance
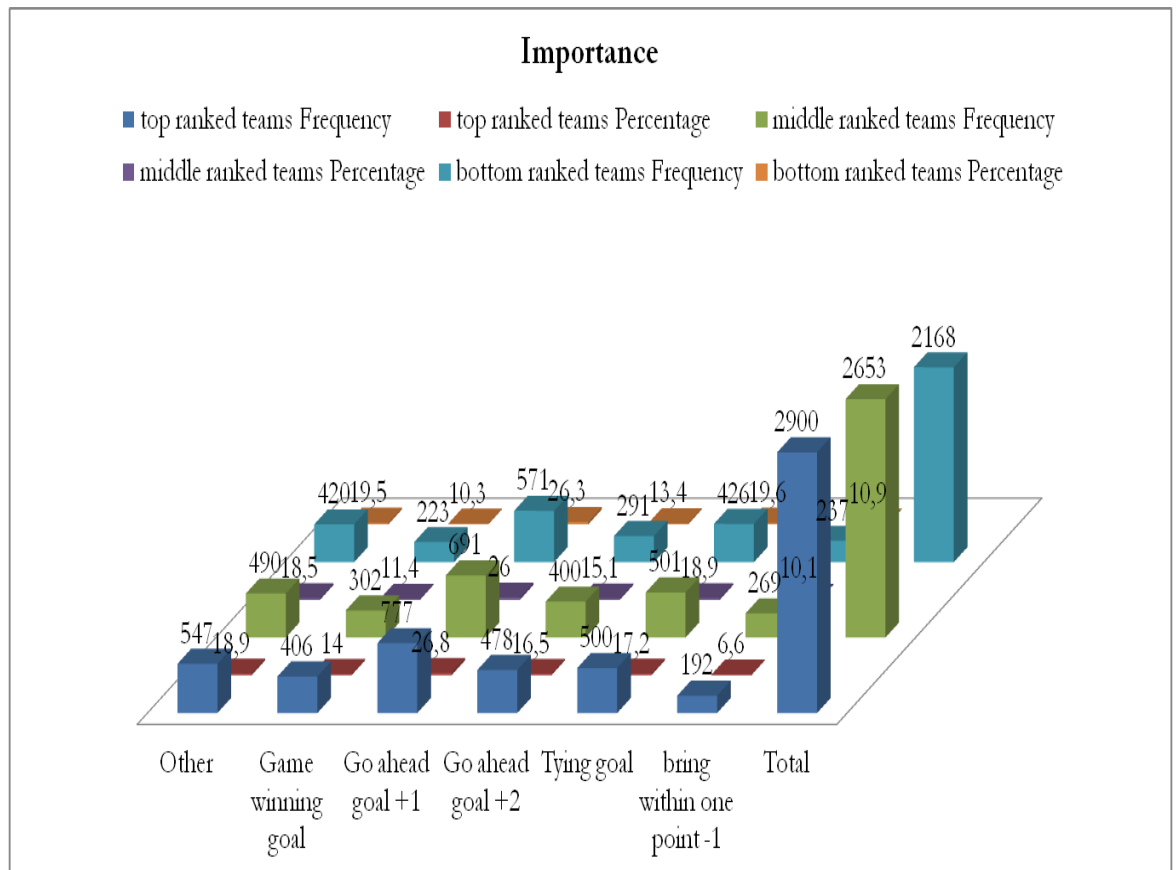
Figure 12. Importance of the goal

Most goals by top teams of the NHL are scored to go ahead+1 by 26.8 percent. 17.2 percent of all goals are score to tie the score of the game follow by 16.5 percent of goals to go ahead +2. 14 percent are score as game winning goals. 18.9 percent of goals were scored with variable. Only 6.6 percent of all goals from top teams were scored to bring the teams within the one -1

Middle ranked teams score 26 percent of their goals to go ahead +1 but only 15.1 percent to go ahead +2.For middle ranked teams 11.4 percent are game winning goals and 18.9 percent are tying goals of the game. Still 10.1 percent of all goals by middle ranked teams of the NHL are scored to bring the result within one point -1.

Bottom ranked teams of the NHL score 26.3 percent of their goals to go ahead +1 and followed from to go ahead +2 by 13.4 percent. Tying goals are scored by the bottom ranked with 19.6 percent. 10.9 percent of the scored goals bring the result within -1. For the bottom ranked goals 10.3 percent are game- winning goals.

It shows that it is important to go ahead +1 in order to be a top team with 26.8 percent but the other two groups are right behind The next point is vital 16.5 percent the top

25

group scores to go ahead +2 whereas the middle group scores 15.1 percent and the bottom group only 13.4 percent. It shows that it is important not only to lead by one goal but more to lead by two goals to win games and be in the top group of the league. It is important to score a game wining goal. Here the top group scores 14 percent game winning goals and the middle group follows behind with 11.4 and the bottom group scores only 10.3 percent game winning goals.

Top teams don't rely on tying goals 17.2 percent whereas middle ranked teams score 18.9 percent tying goals and bottom teams score 19.6 percent tying goals. Further as you can see in figure 12 the top ranked teams have the lowest number in bring the score within -1.

5.7   Position

Table3. Position of the players

	Top ranked teams		Middle ranked teams		Bottom ranked teams	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Center	1057	36.4	944	35.6	677	31.2
Right winger	661	22.8	733	27.6	602	27.8
Left winger	764	26.3	593	22.4	604	27.9
Defender	418	14.4	383	14.4	285	13.1
Total	2900		2653		2168	

Top ranked teams score 36.4 percent of their total goals from the Center position. Follow by the left wingers with 26.3 percent and 22.8 percent by the Right wingers. Defensemen score 14.4 percent of the goal.

Middle group teams of the NHL score 35.6 percent of their goals from the Center Position. 27.6 Percent of the goals are scored by the Right wingers and 22.4 percent are scored by the Left wingers and 14.4 percent of the goals are scored by the Defensive players.

Bottom ranked teams score only 31.2 percent of their goals by the Centers. Right wingers score 27.8 percent and Left wingers score 27.9. Defensemen score only 13.1 percent. Clearly the bottom ranked teams have an equal percent on the wingers-position.

In order to be a top team your Defensemen have to score around 14 percent of all goals and the Center- position needs to score above 36 percent of all the goals. If the Left or the right wingers score more goals doesn't seem to important because in the bottom group the left and right wingers score almost the equal percent of goals but these teams are still in the bottom group. Here the centers score well under 35 percent with 31.2 percent and the D-men just score 13.1 percent of the teams goals.

5.8   Handed
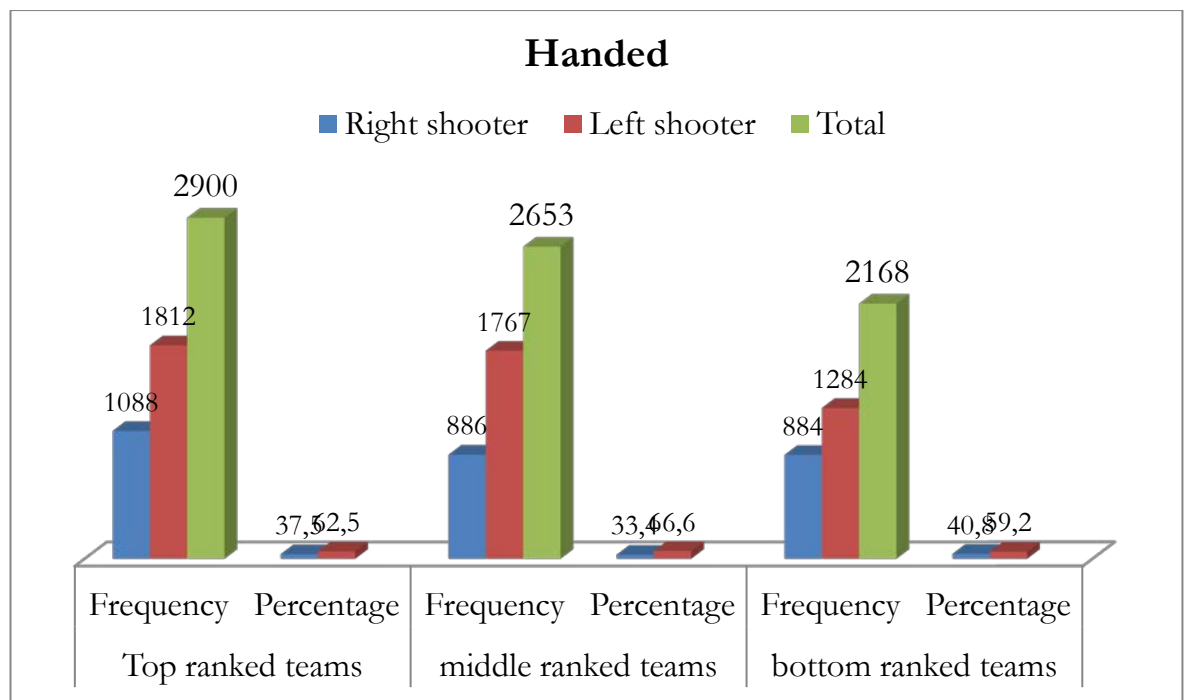
Figure 13. Handed of the players

The top group teams score 62.5 percent of their goals as left shooters and 37.5 as right shooters. The teams which are in the middle group score 66.6 percent of their goal as left shooters and 33.4 as right shooters. Bottom ranked teams score 59.2 percent as left shooters and 40.8 percent score as right shooters as you can see in figure 13.
It shows that top ranked teams have a tendency to score more goals with left handed shooters than with right handed but this clearly doesn't matter what group the teams belongs to.

5.9   Area where the team gains puck possession
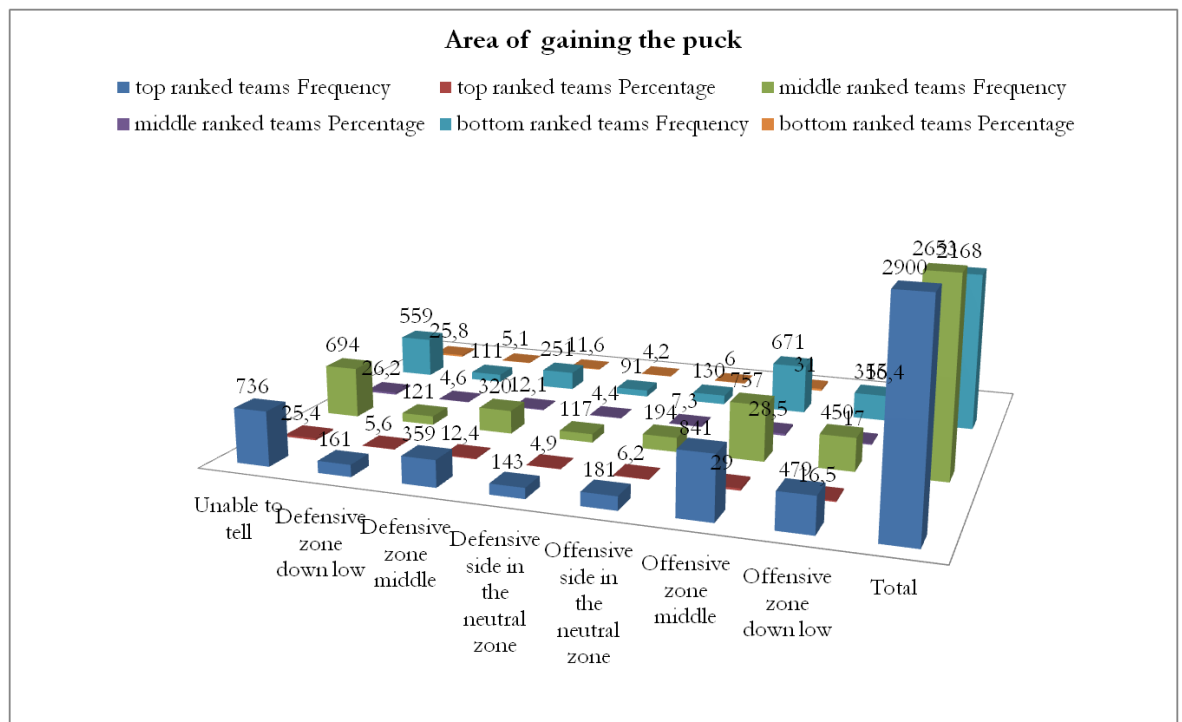
Figure 14. Area of puck possession

Top ranked teams get in possession of the puck prior to scoring as shown in figure 8. 5.6 percent of the score goals the teams get the puck in the Defensive zone down low. 12.4 percent the teams win the puck in the middle of the Defensive zone and 4.9 percent the team wins it on the defensive side of the neutral zone. A total of 22.9 percent of all goals the puck is won in the defensive side of the game for top ranked teams.

6.2 percent of the scored goals the puck is possessed at the offensive side of the neutral zone. 29.0 percent of the goals the puck is gained at the middle of the offensive zone and 16.5 percent of the goals the puck is won down low in the offensive end. This sums up to a total of 51.7 percent of the scored goals for the top teams the puck is won in the offensive side of the game.

Middle ranked teams gain possession of the puck prior to scoring 4.6 percent in the Defensive zone down low and 12.1 percent in the middle of the defensive zone. 4.4 percent of the goals are puck possessed in the defensive side of the neutral zone. It combines for 21.1 percent of all goals the puck is won in the defensive side of the game.

On the offensive side middle ranked teams get puck possession with 7.3 percent in the offensive zone of the neutral zone and 28.5 percent in the middle of the offensive

zone. 17.0 percent of the goals the puck is possessed down low in the offensive zone. All in all 52.8 percent of the scored goal the puck is won on the offensive side of the hockey game.

Bottom ranked group teams in the NHL win 5.1 percent the puck in the defensive zone down low prior to scoring. 11.6 percent of all goals the puck is gained in the middle of the defensive zone and 4.2 percent of the goals the puck is won in the defensive part of the neutral zone. It totals 20.9 percent of all goals the puck is gained in the defensive side of the game as it is shown in figure 14.
On the offensive side of the game the bottom ranked teams score 6.0 percent of the goal winning the puck in the offensive side of the neutral zone. 31.0 percent of the goals are scored by winning the puck in the offensive zone middle. 16.4 percent of the goals are scored by gaining the puck in the offensive zone down low. All together it sums up to 53.4 percent.

All three groups have a scoring percentage over 50 percent in the offensive zone lead by the bottom group with 53.4 percent of all goals the puck is gained in the offensive side of the game, 52.8 percent by the middle ranked group and only 51.7 percent by the top ranked teams. On the defensive end the ranking is vice versa the top ranked teams lead with 22.9 percent of score goal starting from the defensive end, followed by the middle ranked group with 21.1 percent and the bottom ranked group by 20.9 percent.
It indicates that top ranked have a working fore-checking system with 51.7 percent of all goals are scored by winning the puck in the offensive side of the ice. Further they have a working back-checking since 22.9 percent of all goals are scored by possessing the puck on the defensive side of the ice. Middle ranked teams are on both ends only mediocre with 52.8 percent are scored by winning the puck in the offensive end. In addition they win the puck prior to scoring 21.1 percent in the defensive side. The bottom teams relaying heavily on their fore-checking with 53.4 percent of all goals are scored with gaining possession of the puck in the offensive side of the ice and only 20.9 percent of the goals the puck is gained in the defensive part of the ice.

5.10   Way of puck possession
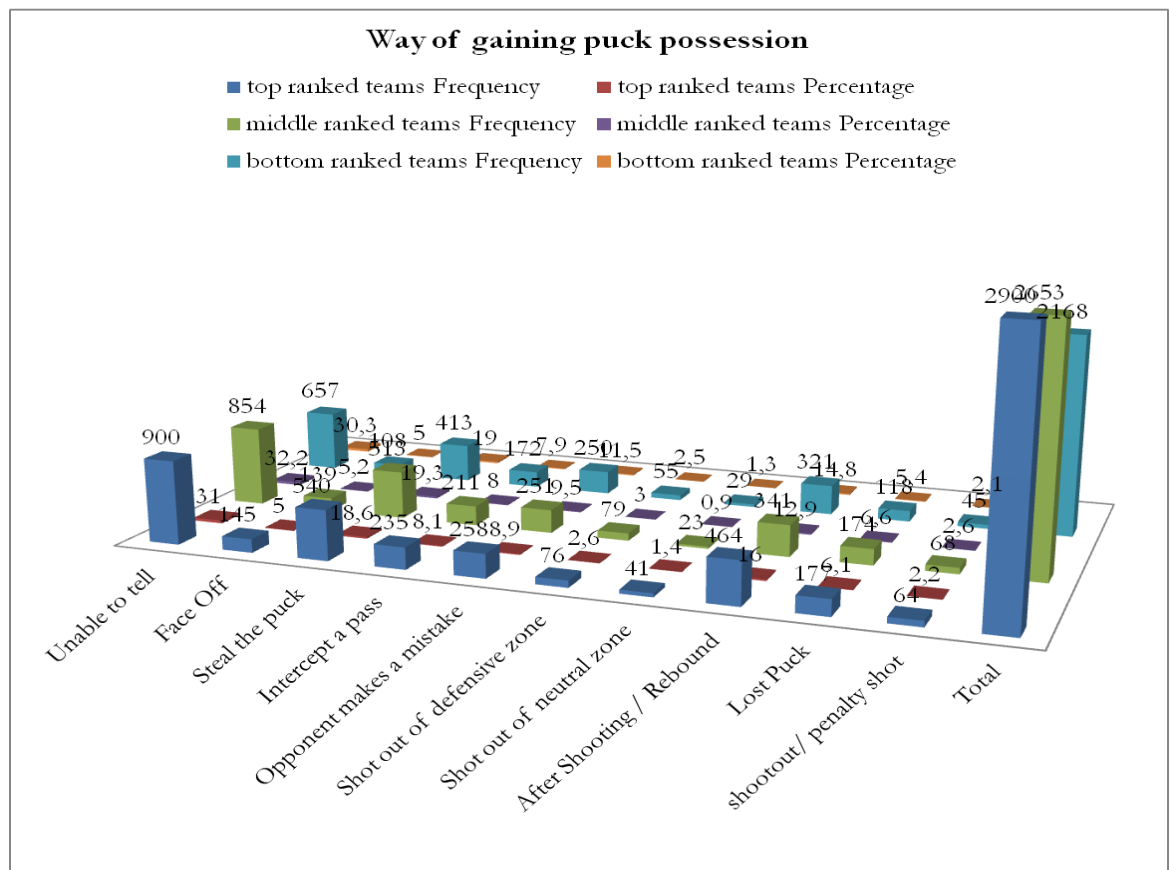
Figure 15. Way of puck possession

Top ranked teams way of gaining the puck prior to scoring is by 5.0 percent through the Face off. 18.6 percent of gaining the puck prior to scoring is to steal the puck from the opponent and 8.1 percent by intercepting a pass and 8.9 percent while the opponent made a mistake.

2.6 percent of gaining the puck is by a shot out of the defensive zone and 1.4 percent by a shot out of the neutral zone. The teams gain the puck after shooting or on a rebound by16.0 percent. 6.1 percent of gaining the puck is by picking up a lost puck. And 2.2 percent of gaining the puck happens in shootout or penalty shoot situations as you can see in figure 15.

Middle ranked teams gain the puck by 5.2 percent of the Face off and 19.3 percent they steal the puck from the opponent and 8.0 percent they intercept a pass. In addition 9.5 percent of the goals are scored from gaining the puck by opponent's mistake. Middle rank teams get in possession of the puck by 3.0 percent of a shot out of the defensive zone and 0.9 percent by a shot of the neutral zone. The teams gain 12.9 percent of their puck by rebounds or after the shooting and 6.6 percent by a lost puck. 2.6 percent of all goals the teams get possession of the puck on a shootout or penalty shot situation.

30

The bottom ranked teams gain the puck prior to the goal by 5.0 percent of Face off and 19.0 percent they steal the puck from the opponent. The bottom teams score 7.9 percent of the goals by intercept a pass. The lower ranked teams gain 2.5 percent of their puck by shots out of the defensive zone and 1.3 percent by shots out of the neutral zone. 14.8 percent of the goals scored by these teams the puck was gained after shooting or on a rebound and 5.4 percent were a lost puck. The bottom ranked teams score 2.1 percent of the goals by gaining the puck on a shootout or penalty situation. Top ranked teams score of rebounds or after shooting is significantly higher than in the other groups with 16.0 percent compared to 12.9 percent by middle ranked teams and 14.8 percent by the bottom group. Gaining the puck by a face off is for all groups equal around 5.0 percent and even stealing the puck around 19.0 percent. Furthermore pass interceptions are ranked around 8.0 percent for all groups. Also getting in possession of a lost puck is the same percentage around 6.6 percent.

Interesting is that the bottom group has a significant higher percentage of gaining the puck by mistakes of the opponent.

In order to be a top team the players of the teams need to get the puck after shooting or on the rebound, that's clearly were top teams have a higher percentage in goal scoring than the other two groups.

5.11   Direction of the attack

Table 4. Direction of the attack

	Direction of the attack					
	Top ranked teams		Middle ranked teams		Bottom ranked teams	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Unable to tell	535	18.4	509	19.2	392	18.1
Forward/ towards to opponents net	1592	54.9	1458	55	1202	55.4
Sideways	389	13.4	339	12.8	288	13.3
Backwards or stop	383	13.2	347	13.1	285	13.1
Total	2900		2653		2168	

As you can see in table 4 the direction of the attack shows the similar percentage in all three groups. The direction of the attack makes no significant differences in being a top team.

5.12 Defensive readiness of the opponent

Table 5 Defensive readiness of the opponent

| | Defensive readiness of the opponent | | | | | |
| | Top ranked teams | | Middle ranked teams | | Bottom ranked teams | |
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Unable to tell	151	5.2	171	6.4	141	6.5
Counter attack when the other team isn't organized	1023	35.3	978	36.9	826	38.1
Fast break when opponent is organized (even strength situation)	761	26.2	690	26	578	26.7
Slow attack when opponent is organized	965	33.3	814	30.7	623	28.7
Total	2900		2653		2168	

The top ranked teams score 35.2 percent of the goals when the opponent is not organized to defend. These teams also score 26.2 percent of the goals out of a fast break when opponent is organized, which means an even strength situation. 33.3 percent of the goals scored on slow attacks when the opponent is organized to defend. Top rank teams score a 61.5 percent on fast transition situations either against unorganized defense or fast break against an organized defense.

The goals scored by middle ranked teams are scored by 36.9 percent on counter attacks when the opponent was not organized to defend. The middle ranked teams score further 26.0 percent from fast breaks where the defense is organized and only 30.7 percent from slow attacks when the opponent is ready to defend. In total the middle ranked teams score a 62.9 percent of all their goals on fast transition situations and only 30.7 percent of the goals on slow transition situations.

Bottom ranked teams score 38.1 percent of their goals on counter attacks when the opponent is not organized to defend. 26.7 percent of the goals by the bottom ranked teams is scored on fast breaks when the opponent is organized. 28.7 percent of the goals from the bottom ranked teams are scored on slow attacks when the opponent is organized to defend.

It is important to score goals when the opponent is unorganized or with a fast break against an organized defense. Both categories need a fast transition from defense to offense in order to get the opponent unorganized or get the fast break situation. In all three groups over two thirds of the goals are scored against this defensive readiness. But top teams can score a third of their goals against an organized defense in a slow attack on relatively slow transition situations.

5.13 Duration of the attack

Table 6 Duration of the attack

	Duration of the attack					
	Top ranked teams		Middle ranked teams		Bottom ranked teams	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Unable to tell	433	14.9	430	16.2	345	15.9
0- 5 sec.	1126	38.8	1142	43	972	44.8
5- 10 sec.	1020	35.2	989	37.3	768	35.4
10- 15 sec.	118	4.1	81	3.1	74	3.4
15- 20 sec.	10	0.3	8	0.3	7	0.3
> 20 sec.	1	0	3	0.1	2	0.1
Total	2708		2653		2168	

As it is shown in table 6 most goals scored in the NHL are scored on attacks lasting from zero until ten seconds. It combines almost 80 percent of all goals. It shows no significance being a top. It is more a sign of how hockey is played.

5.14 Number of passes
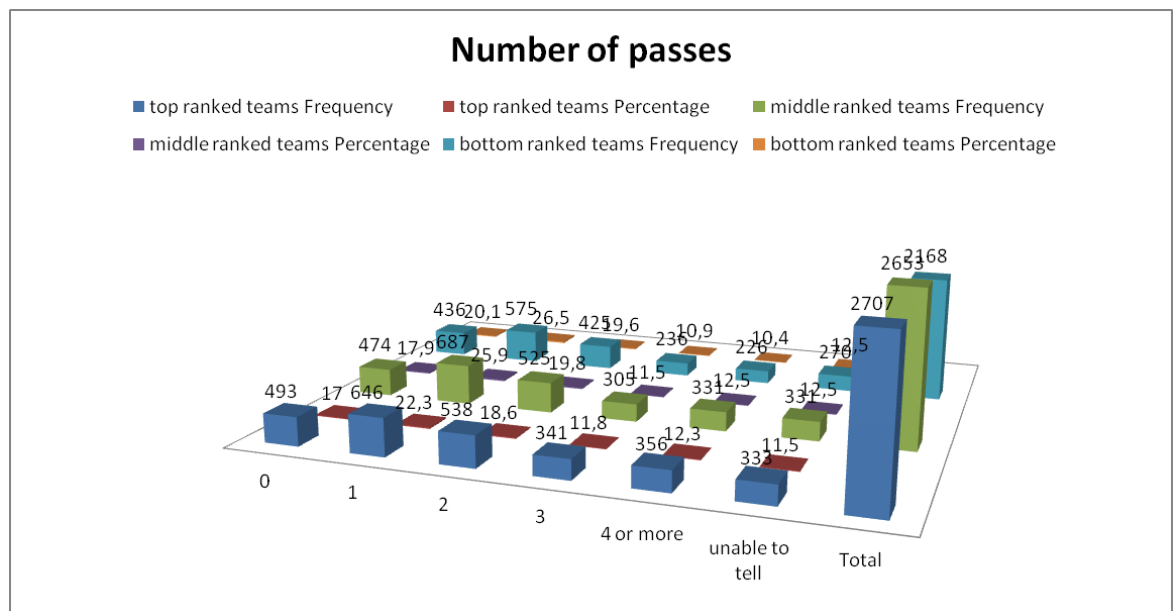
Figure 16. Number of passes

Figure 16 shows that the top ranked teams scored 17.0 percent goals without a pass and 22.3 percent with one pass and 18.6 percent with two pass and 11.8 percent of the goals have three passes and 12.3 percent have 4 or more. 11.5 percent of the goals the number of pass is unable to tell.

Middle ranked teams score 17.9 percent of their goals without a pas and 25.9 percent with one pass. Another 19.8 percent of the goals are scored after two passes. Followed by 11.5 percent after three passes and 12.5 percent of the goals are scored after 4 or more passes.

Bottom ranked teams are scoring 20.1 percent of their goal with zero passes and 26.5 percent with one pass and another 19.6 percent after two passes. After three pass bottom ranked teams score 10.9 percent. After four or more passes bottom ranked teams score 10.4 percent.

5.15   Situation crossing the blue line

Crossing the blue line category is not very reliable because with 49.0 and more percent rate of the cases are unable to tell. It is a result of collecting data so the action on crossing the blue line is visible and measureable. And it seems that the trends are not reflecting the reality.

5.16   Scoring area of the ice
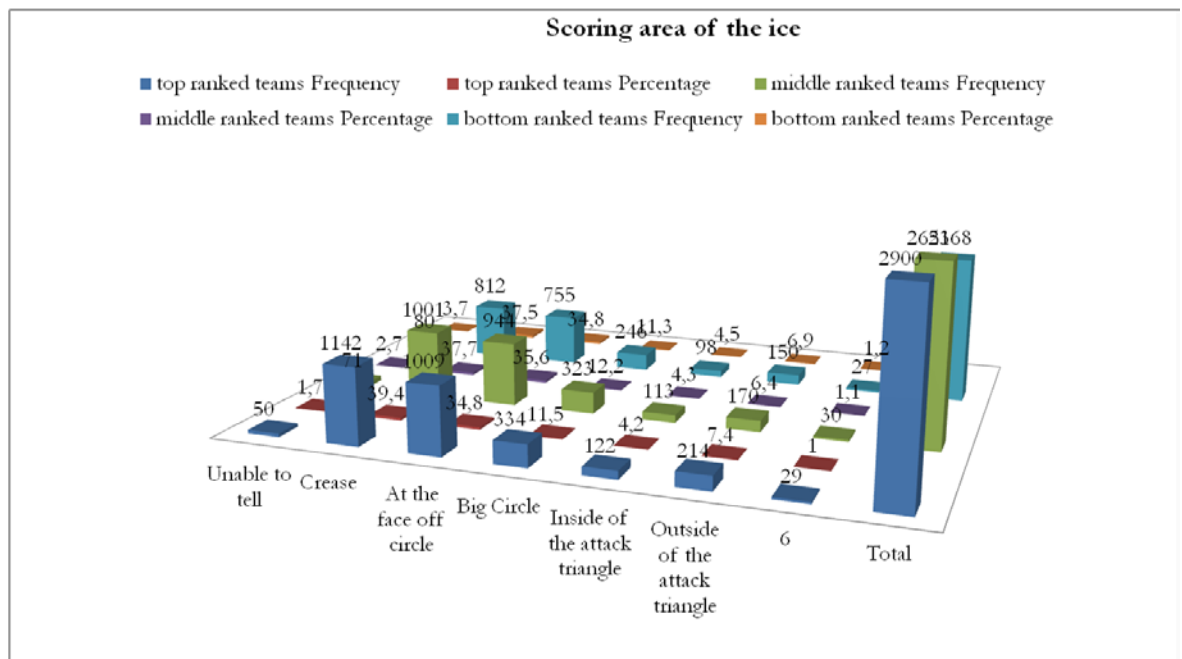
Figure 17. Scoring area on the ice

As shown in figure 17 top ranked teams score 39.4 percent from the crease and 34.8 percent from the face off circle. That's a combined result of 74.2 percent of all goals scored by the top teams. 11.5 percent of the goals are scored from the big circle and 4.2 percent of the goals are scored within the attacking triangle and 7.4 percent are scored outside and 1 percent is scored from the area number 6.

Middle ranked teams score 37.7 percent of their goals in the crease area and 35.6 percent in the face off circle. It combines 73.3 percent of the goals are scored from the face of circle and closer to the goal. 12.2 percent of the goals from middle ranked teams are scored with in the big circle, 4.3 percent are scored inside the attacking triangle, 6.4 percent outside the attacking triangle and 1.1 percent from the area number 6.

Bottom ranked teams score 37.5 percent of their goals within the crease and 34.8 percent within the face off circle. It combines a total of 72.3 percent of the scored goals are scored from the slot area. 11.3 percent of the goals from bottom ranked teams are scored from the big circle, 4.5 percent are scored inside the attacking triangle, 6.9 percent outside of the attacking triangle and another 1.2 percent is scored from the area behind the blue line are number 6.

It shows that all teams no matters of their ranking have scored over 70 percent from the slot area with over 37 percent is score directly from the crease. Also all three groups scored around 11 percent from the big circle, 4 percent is scored within the attacking triangle and about 7 percent is scored outside the triangle. Figure 17 clearly shows that in order to be a top team, teams need to score 39.4 percent from the crease area and 7.5 percent from outside the attacking triangle.

5.17   Technique used on scoring
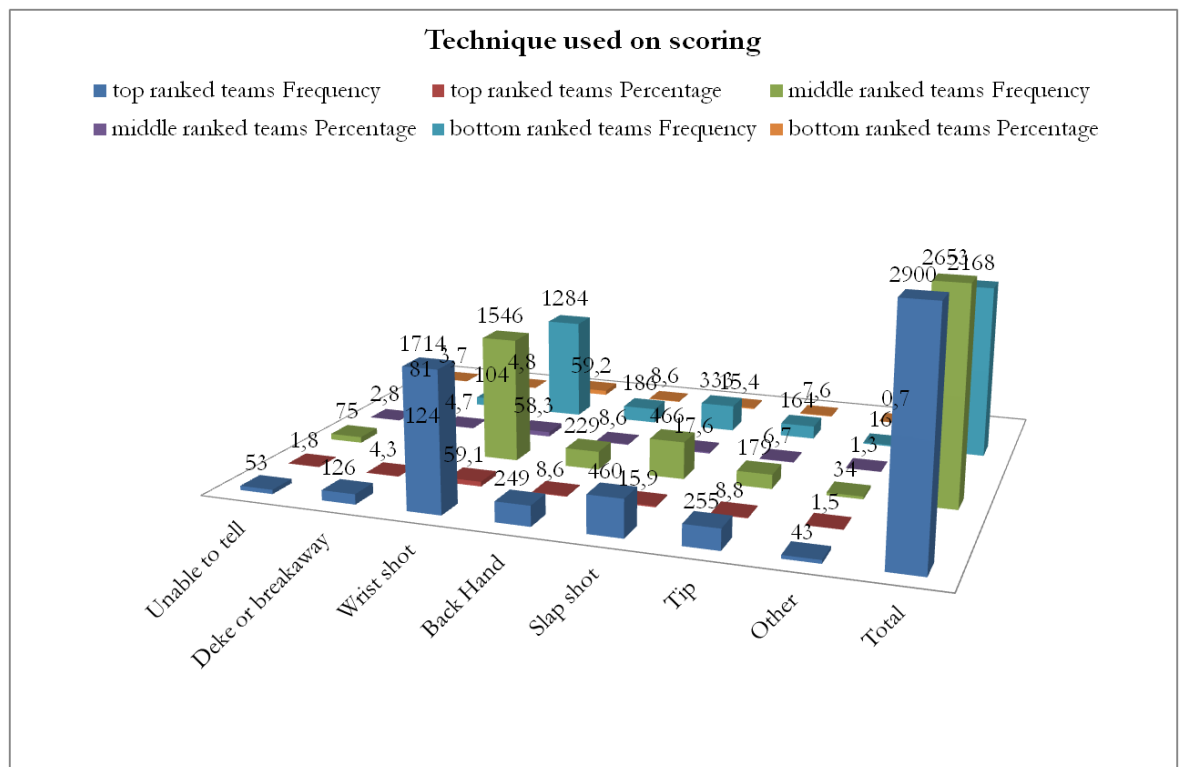
Figure 18. Technique used on scoring

In figure 18 are shown top teams scored 59.1 percent with a wrist shot and 15.9 percent with a slap shot. Further the teams score 8.6 percent with back hand shots and 8.8 percent with a tip in and 4.3 percent are dekes or breakaways.1.5 percent of the goals are scored in other ways.

Middle ranked teams score 58.3 percent with a wrist shot and 17.6 percent are scored with a slap shot. Middle ranked teams score also 8.6 percent with a back hand shoot and 6.7 percent are tipped in and 4.7 percent are scored with a deke or a breakaway. 1.3 percent of the goals are scored on other techniques.

59.2 percent of all goals scored by the bottom ranked teams are scored with a wrist shot. With the slap shot bottom ranked teams scored 15.4 percent and further 8.6 percent are scored with the back hand shoot. 7.6 percent are scored by a tip in. Only 4.8 percent of the goals are scored on a deke or a breakaway and 0.7 percent is scored in another technique.

It is important for being a top team to score with the wrist shot followed by the slap shot technique and the tip ins.

5.18 Way of scoring

Table 7 way of scoring

	Way of scoring					
	Top ranked teams		Middle ranked teams		Bottom ranked teams	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Unable to tell	51	1.8	72	2.7	80	3.7
One timer shot (*Tip)	1529	52.7	1328	50.1	1089	50.2
Recieve a pass and shoot	405	14	372	14	301	13.9
Receive the puck, short puck control, then shot	379	13.1	350	13.2	290	13.4
Puck control, then shot	353	12.2	342	12.9	264	12.2
Breakaway	107	3.7	125	4.7	87	4
Walk out	43	1.5	36	1.4	29	1.3
other	32	1.1	28	1.1	27	1.2
Total	2900		2653		2168	

Table 7 shows that top ranked teams are more successful in one timer shots than the other teams. All other ways are used similar by the teams.

5.19 Area of the net

Table 8 area of the net

| | Area of the net | | | | | |
| | Top ranked teams | | Middle ranked teams | | Bottom ranked teams | |
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Unable to tell	241	8.3	243	9.2	238	11
low blocker	608	21	544	20.5	408	18.8
low glove	532	18.3	470	17.7	409	18.9
high blocker	432	14.9	382	14.4	302	13.9
high glove	593	20.4	549	20.7	459	21.2
five- hole	494	17	465	17.5	352	16.2
Total	2900		2653		2168	

Table 8 represents that the area of net is no indicator on being a top ranked team because the teams score in all five areas similar.

5.20   Supportive action
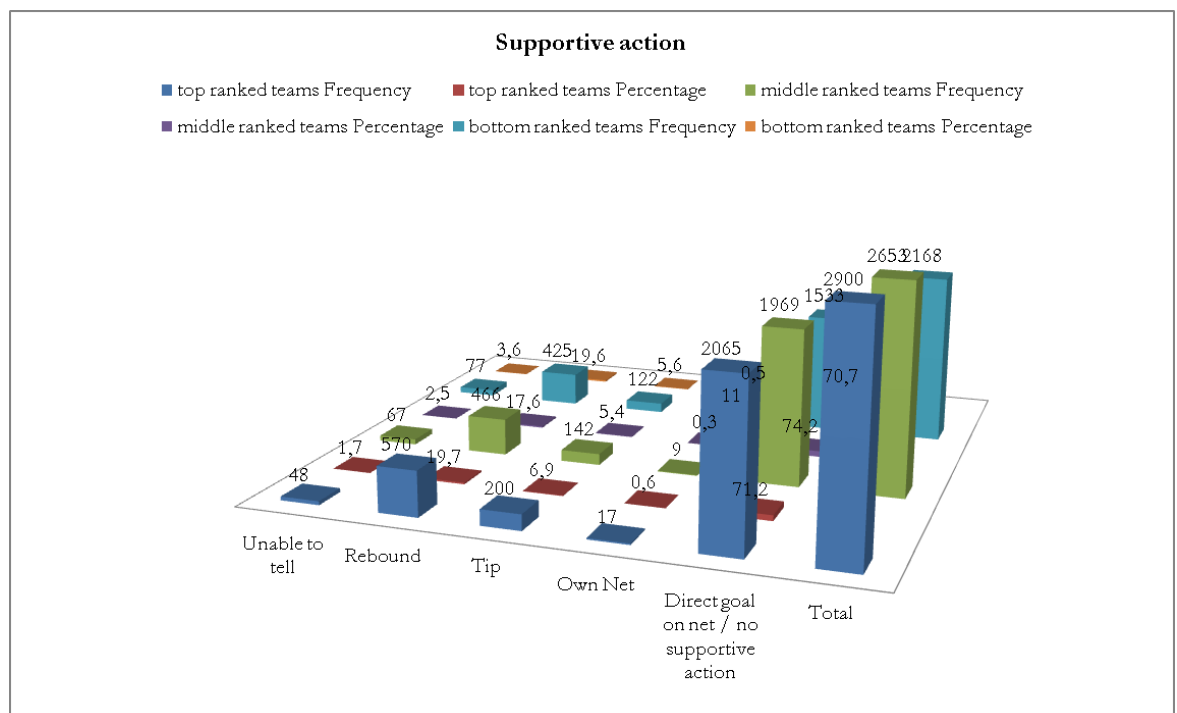
Figure 19. Supportive action

The figure 19 shows that the direct goal on net/ no supportive action is most used supportive action by all teams. Followed supportive action is the rebound by all teams. So it is not important for the top ranked teams to have high percentage of rebounds but to be successful in the tip in it is used 6.9 percent on the scored goals.

6   Discussion

Overall top ranked teams in the National Hockey League score more goals than the other teams. The reason why top teams score 9.5 percent more goals than bottom ranked teams is the participation of top teams in the play offs.

To set the team apart in order to be a top team it is important to have high scoring centers.

Also it is important to score power play goals for top ranked teams. Top teams score 27.3 percent of their goals on power play situations. The difference between top ranked and middle teams or even bottom teams is the ability to score power play goals. It is significant that top ranked team score game winning goals.

Further, a close look at the results showed that a key area of being a top team is where the teams gain puck possession, in order to be a top it is not only important to gain the puck in the offensive zone but also in the neutral zone and the defensive zone and score after gaining the puck. The top ranked team group led the scoring after gaining the puck in the defensive zone down low with 5.6 percent, the defensive zone middle with 12.4 percent and the defensive side in the neutral zone 4.9 percent. The middle ranked team led in gaining the puck at the offensive side of the neutral zone with 7.3 percent and the offensive zone down low with 17.0 percent. The bottom ranked teams lead in gaining the puck in the offensive zone middle with 31 percent. All three groups have a percentage over 28 percent of gaining the puck in the offensive zone down middle and over 16 percent in gaining the puck offensive zone down low.

It is clearly that fore- checking is an important part in modern hockey but it is not enough to be on the top of the league. It speaks for importance to be able to play successful the defensive part of the game that is why the top ranked team group is leading in gaining the puck on the defensive area of the ice.

For top group teams the way of gaining the puck is shooting or of rebounds with 16.0 percent. Intercepting a pass, stealing from the opponent and after face off is more part of modern hockey than a difference for the ranking since all results are similar.

The direction of the attack is important in modern hockey. Most goals are scored in the forward/ towards opponent's net direction than in the other directions.

Attacking forward is clearly important but in order to be in the top ranked teams, it needs to score from the side ways and backwards or stop direction.

In modern hockey it is important to score from fast attacks but in order to be a top team it is necessary to score also from slow attacks against an organized defense. The results of the variable duration of the attack underline the importance of fast attacks.

Since passing the puck in hockey also carries the biggest possibility in turning the puck over it is not surprising that most goals are scored by all three category after 0 and only 1 pass, top teams though leading the scoring after 3 passes.

It indicates that the top teams are able to maintain puck possession successfully, when we look at the results of the variable area of gaining the puck. Here the top teams are leading the defensive zone down low category.

The significant variable in goal scoring is the area on the ice from where the player scores. Here the top team leads in scoring from the crease with 39.4 percent as well as from outside the attacking triangle with 7.4 percent. So top teams keep puck possession invading the opponent's crease and also have the ability to score from outside the attacking triangle.

Analyzing the shooting technique of all three groups gave one interesting fact. All three groups score exactly 8.6 percent of their goals with a back hand shoot. The top ranked group only set itself apart in scoring technique with a tip in by 8.8 percent.

Top ranked group scores 52.7 percent of their entire goal from the one time shoot, the way which leaves the opponent's goalie the least amount of time to react, and their setting it apart by 2.7 percent over the other two groups.

To be a top team support on scoring needs to be successful tip ins.

The handed of the shooter doesn't have an impact because I cannot clearly determine how often a left- or right handed shooter scored.

The variable of the game time has no significant impact on being a top team.

Further the area of the net- category has no impact on being among top ranked teams. Though the amount of goals between the three groups differs a lot the percentage are closer than expected.

Some variables have no direct influence of the standing of the team.

These variables seem to be more significant to the nature of the hockey game like direction, defensive readiness area of the net, goal importance.

The variable situation crossing the blue line is not meaningful due to the fact that almost 50 percent of the cases are labeled unable to tell. A reason for this is probably the length of the video clips by NHL. It is not visible how the blue is crossed.

6.1   Conclusion

In a nutshell top teams in the National Hockey League need to score goals and lots of them. Apart from scoring on even strength the top teams need to score from power play situations. Top teams have high scoring centers. The ability to break out from the defensive side indicates a top ranked team. Top teams score also the most goals from the three groups when the attack is slow and the defense is organized. Top teams can maintain possession of the puck because of leading the passes category after three passes.

Of course the team needs to be good in the other categories, therefore needs to play well in all areas of the game. These are the main parts where the top group teams need to be good. Without this the teams cannot be in the top group.

I cannot say something about top ranked teams' efficiency based on the study design and data.

6.2   Future Research

For future research the data should be collected over several seasons so comparison can be made in among the groups top, middle, bottom groups and over the whole season. The development of teams and their reason behind it would be visible. Also trends could be spotted and followed up. For future research a change of variable could be beneficial. Also the collection of data could be changed to analyze the differences of efficiency. Finally data from European elite leagues could be collected and analyzed and compared with NHL data so differences between the big European and the smaller North American ice surface would be visible.

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Appendix

Top ranked teams

GET FILE='G:\Thesis data sets\putting togther top teams\NHL_Goal analysis_2006-2007 Top teams together.sav'. FREQUENCIES VARIABLES=TeamA TeamB Rink Homeaway Time Strength @1stgoal Import Differ Result Ju.Williams Position Handed R.Area Way D ir Readin Duration Passes Situation S.Area Techn Wayofscoring Areaofnet Action V29 V30 V31 SJL   /ORDER=ANALYSIS.

Frequencies

Notes		
Input	Output Created	01-Feb-2012 12:54:03
	Comments	
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	Cases Used	Statistics are based on all cases with valid data.
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Frequency Table

Home/away

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Home	1537	53,0	53,0	53,0
	Away	1363	47,0	47,0	100,0
	Total	2900	100,0	100,0	

Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0- 5 min	199	6,9	6,9	6,9
	5- 10min	235	8,1	8,1	15,0
	10- 15 min	201	6,9	6,9	21,9
	15- 20 min	197	6,8	6,8	28,7
	20- 25min	244	8,4	8,4	37,1
	25-30 min	274	9,4	9,4	46,6
	30- 35 min	262	9,0	9,0	55,6
	35- 40 min	245	8,4	8,4	64,0
	40- 45 min	216	7,4	7,4	71,5
	45- 50 min	215	7,4	7,4	78,9
	50- 55 min	216	7,4	7,4	86,3
	55- 60 min	281	9,7	9,7	96,0
	60- 65 min	48	1,7	1,7	97,7
	65- 70 min	2	,1	,1	97,8
	70- 75 min	2	,1	,1	97,8
	75- 80 min	1	,0	,0	97,9
	>80 min	7	,2	,2	98,1

		Frequency	Percent	Valid Percent	Cumulative Percent
	shootout	55	1,9	1,9	100,0
	Total	2900	100,0	100,0	

Strength

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Even Strength	1818	62,7	62,7	62,7
	Power Play	791	27,3	27,3	90,0
	Power Play +2	62	2,1	2,1	92,1
	Short Handed	81	2,8	2,8	94,9
	Short Handed -2	2	,1	,1	95,0
	6 v.5 team with added attacker scores	6	,2	,2	95,2
	6 v.5 team without added attacker scores	68	2,3	2,3	97,5
	Shootout	65	2,2	2,2	99,8
	Power play empty net	3	,1	,1	99,9
	Short Handed empty net	4	,1	,1	100,0
	Total	2900	100,0	100,0	

1 st goal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2381	82,1	82,1	82,1
	Yes	519	17,9	17,9	100,0
	Total	2900	100,0	100,0	

Import.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other	547	18,9	18,9	18,9
	Game winning goal	406	14,0	14,0	32,9
	Go ahead goal +1	777	26,8	26,8	59,7

		Frequency	Percent	Valid Percent	Cumulative Percent
	Go ahead goal +2	478	16,5	16,5	76,1
	Tying goal	500	17,2	17,2	93,4
	bring within one point -1	192	6,6	6,6	100,0
	Total	2900	100,0	100,0	

Differ

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1341	46,2	46,2	46,2
	2	537	18,5	18,5	64,8
	3	576	19,9	19,9	84,6
	4	208	7,2	7,2	91,8
	5	144	5,0	5,0	96,8
	6	60	2,1	2,1	98,8
	7	25	,9	,9	99,7
	8	9	,3	,3	100,0
	Total	2900	100,0	100,0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Center	1057	36,4	36,4	36,4
	Right winger	661	22,8	22,8	59,2
	Left winger	764	26,3	26,3	85,6
	Defender	418	14,4	14,4	100,0
	Total	2900	100,0	100,0	

Handed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Right shooter	1088	37,5	37,5	37,5
	Left shooter	1812	62,5	62,5	100,0
	Total	2900	100,0	100,0	

R. Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	736	25,4	25,4	25,4
	Defensive zone down low	161	5,6	5,6	30,9
	Defensive zone middle	359	12,4	12,4	43,3
	Defensive side in the neutral zone	143	4,9	4,9	48,2
	Offensive side in the neutral zone	181	6,2	6,2	54,5
	Offensive zone middle	841	29,0	29,0	83,5
	Offensive zone down low	479	16,5	16,5	100,0
	Total	2900	100,0	100,0	

Way

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	900	31,0	31,0	31,0
	Face Off	145	5,0	5,0	36,0
	Steal the puck	540	18,6	18,6	54,7
	Intercept a pass	235	8,1	8,1	62,8
	Opponent makes a mistake	258	8,9	8,9	71,7
	Shot out of defensive zone	76	2,6	2,6	74,3
	Shot out of neutral zone	41	1,4	1,4	75,7
	After Shooting / Rebound	464	16,0	16,0	91,7
	Lost Puck	177	6,1	6,1	97,8
	shootout/ penalty shot	64	2,2	2,2	100,0
	Total	2900	100,0	100,0	

Dir.

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid					
		1	,0	,0	,0
	Unable to tell	535	18,4	18,4	18,5
	Forward/ towards to opponents net	1592	54,9	54,9	73,4
	Sideways	389	13,4	13,4	86,8
	Backwards or stop	383	13,2	13,2	100,0
	Total	2900	100,0	100,0	

Readin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	151	5,2	5,2	5,2
	Counter attack when the other team isn't organized	1023	35,3	35,3	40,5
	Fast break when opponent is organized (even strength situation)	761	26,2	26,2	66,7
	Slow attack when opponent from scoring	965	33,3	33,3	100,0
	Total	2900	100,0	100,0	

Duration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	433	14,9	16,0	16,0
	0- 5 sec.	1126	38,8	41,6	57,6
	5- 10 sec.	1020	35,2	37,7	95,2
	10- 15 sec.	118	4,1	4,4	99,6
	15- 20 sec.	10	,3	,4	100,0
	> 20 sec.	1	,0	,0	100,0
	Total	2708	93,4	100,0	
Missing	System	192	6,6		
	Total	2900	100,0		

Passes

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	193	6,7	6,7	6,7
0	493	17,0	17,0	23,7
1	646	22,3	22,3	45,9
2	538	18,6	18,6	64,5
3	341	11,8	11,8	76,2
4 or more	356	12,3	12,3	88,5
unable to tell	333	11,5	11,5	100,0
Total	2900	100,0	100,0	

Situation

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	192	6,6	6,6	6,6
.	1	,0	,0	6,7
0	218	7,5	7,5	14,2
1v. 0 or 2v.0	174	6,0	6,0	20,2
13	1	,0	,0	20,2
2 v.1	139	4,8	4,8	25,0
3 v. 2 or 3 v. 1	90	3,1	3,1	28,1
1 v. 1 or 2 v. 2 or 3 v.3	553	19,1	19,1	47,2
Unable to tell	1422	49,0	49,0	96,2
Odd man rush (underload)	110	3,8	3,8	100,0
Total	2900	100,0	100,0	

S. Area

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	50	1,7	1,7	1,7
	Crease	1142	39,4	39,4	41,1
	At the face off circle	1009	34,8	34,8	75,9
	Big Circle	334	11,5	11,5	87,4

		Frequency	Percent	Valid Percent	Cumulative Percent
	Inside of the attack triangle	122	4,2	4,2	91,6
	Outside of the attack triangle	214	7,4	7,4	99,0
	6	29	1,0	1,0	100,0
	Total	2900	100,0	100,0	

Techn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	53	1,8	1,8	1,8
	Deke or breakaway	126	4,3	4,3	6,2
	Wrist shot	1714	59,1	59,1	65,3
	Back Hand	249	8,6	8,6	73,9
	Slap shot	460	15,9	15,9	89,7
	Tip	255	8,8	8,8	98,5
	Other	43	1,5	1,5	100,0
	Total	2900	100,0	100,0	

Way of scoring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	51	1,8	1,8	1,8
	One timer shot (*Tip)	1529	52,7	52,7	54,5
	Recieve a pass and shoot	405	14,0	14,0	68,4
	Receive the puck, short puck control, then shot	379	13,1	13,1	81,5
	Puck control, then shot	353	12,2	12,2	93,7
	Breakaway	107	3,7	3,7	97,4
	Walk out	43	1,5	1,5	98,9
	other	32	1,1	1,1	100,0
	8	1	,0	,0	100,0
	Total	2900	100,0	100,0	

Area of net

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	241	8,3	8,3	8,3
	low blocker	608	21,0	21,0	29,3
	low glove	532	18,3	18,3	47,6
	high blocker	432	14,9	14,9	62,5
	high glove	593	20,4	20,4	83,0
	five- hole	494	17,0	17,0	100,0
	Total	2900	100,0	100,0	

Action

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	48	1,7	1,7	1,7
	Rebound	570	19,7	19,7	21,3
	Tip	200	6,9	6,9	28,2
	Own Net	17	,6	,6	28,8
	Direct goal on net / no supportive action	2065	71,2	71,2	100,0
	Total	2900	100,0	100,0	

Middle ranked teams

GET   FILE='G:\Thesis data sets\putting together middle teams\NHL_Goal analysis_2006-2007 ATL.sav'. FREQUENCIES VARIABLES=TeamA TeamB Rink Homeaway Time Strength @1stgoal Import Differ Result Ju.Williams Position Handed R.Area Way D   ir Readin Duration Passes Situation S.Area Techn Wayofscoring Areaofnet Action V29 V30 V31 SJL   /ORDER=ANALYSIS.

Frequencies

Notes

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	Cases Used	Statistics are based on all cases with valid data.
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Statistics

		TeamA	TeamB	Rink	Home/away	Time	Strength	1 st goal
N	Valid	2653	2653	2653	2653	2653	2653	2653
	Missing	0	0	0	0	0	0	0

Statistics

		Import.	Differ	Result	Ju. Williams	Position	Handed	R. Area
N	Valid	2653	2653	2653	2653	2653	2653	2653
	Missing	0	0	0	0	0	0	0

53

Statistics

		Way	Dir.	Readin	Duration	Passes	Situation	S. Area
N	Valid	2653	2653	2653	2653	2653	2653	2653
	Missing	0	0	0	0	0	0	0

Statistics

		Techn	Way of scoring	Area of net	Action	V29	V30
N	Valid	2653	2653	2653	2653	2653	2653
	Missing	0	0	0	0	0	0

Frequency Tables

Home/away

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Home	1379	52,0	52,0	52,0
	Away	1274	48,0	48,0	100,0
	Total	2653	100,0	100,0	

Time

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0- 5 min	158	6,0	6,0	6,0
	5- 10min	191	7,2	7,2	13,2
	10- 15 min	181	6,8	6,8	20,0
	15- 20 min	205	7,7	7,7	27,7
	20- 25min	226	8,5	8,5	36,2
	25-30 min	219	8,3	8,3	44,5
	30- 35 min	228	8,6	8,6	53,1
	35- 40 min	241	9,1	9,1	62,2
	40- 45 min	214	8,1	8,1	70,2
	45- 50 min	211	8,0	8,0	78,2
	50- 55 min	205	7,7	7,7	85,9
	55- 60 min	272	10,3	10,3	96,2

		Frequency	Percent	Valid Percent	Cumulative Percent
	60- 65 min	39	1,5	1,5	97,6
	>80 min	1	,0	,0	97,7
	shootout	62	2,3	2,3	100,0
	Total	2653	100,0	100,0	

Strength

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Even Strength	1657	62,5	62,5	62,5
	Power Play	695	26,2	26,2	88,7
	Power Play +2	65	2,5	2,5	91,1
	Short Handed	97	3,7	3,7	94,8
	Short Handed -2	3	,1	,1	94,9
	6 v.5 team with added attacker scores	2	,1	,1	94,9
	6 v.5 team without added attacker scores	57	2,1	2,1	97,1
	Shootout	66	2,5	2,5	99,6
	Power play empty net	3	,1	,1	99,7
	Short Handed empty net	8	,3	,3	100,0
	Total	2653	100,0	100,0	

1 st goal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2231	84,1	84,1	84,1
	Yes	422	15,9	15,9	100,0
	Total	2653	100,0	100,0	

Import.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Other	490	18,5	18,5	18,5

		Frequency	Percent	Valid Percent	Cumulative Percent
	Game winning goal	302	11,4	11,4	29,9
	Go ahead goal +1	691	26,0	26,0	55,9
	Go ahead goal +2	400	15,1	15,1	71,0
	Tying goal	501	18,9	18,9	89,9
	bring within one point -1	269	10,1	10,1	100,0
	Total	2653	100,0	100,0	

Differ

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	1182	44,6	44,6	44,6
	2	578	21,8	21,8	66,3
	3	543	20,5	20,5	86,8
	4	188	7,1	7,1	93,9
	5	91	3,4	3,4	97,3
	6	28	1,1	1,1	98,4
	7	25	,9	,9	99,3
	8	18	,7	,7	100,0
	Total	2653	100,0	100,0	

Result

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	928	35,0	35,0	35,0
	1	247	9,3	9,3	44,3
	2	316	11,9	11,9	56,2
	3	1162	43,8	43,8	100,0
	Total	2653	100,0	100,0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Center	944	35,6	35,6	35,6

		Frequency	Percent	Valid Percent	Cumulative Percent
	Right winger	733	27,6	27,6	63,2
	Left winger	593	22,4	22,4	85,6
	Defender	383	14,4	14,4	100,0
	Total	2653	100,0	100,0	

Handed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Right shooter	886	33,4	33,4	33,4
	Left shooter	1767	66,6	66,6	100,0
	Total	2653	100,0	100,0	

R. Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	694	26,2	26,2	26,2
	Defensive zone down low	121	4,6	4,6	30,7
	Defensive zone middle	320	12,1	12,1	42,8
	Defensive side in the neutral zone	117	4,4	4,4	47,2
	Offensive side in the neutral zone	194	7,3	7,3	54,5
	Offensive zone middle	757	28,5	28,5	83,0
	Offensive zone down low	450	17,0	17,0	100,0
	Total	2653	100,0	100,0	

Way

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	854	32,2	32,2	32,2
	Face Off	139	5,2	5,2	37,4
	Steal the puck	513	19,3	19,3	56,8
	Intercept a pass	211	8,0	8,0	64,7

	Frequency	Percent	Valid Percent	Cumulative Percent
Opponent makes a mistake	251	9,5	9,5	74,2
Shot out of defensive zone	79	3,0	3,0	77,2
Shot out of neutral zone	23	,9	,9	78,0
After Shooting / Rebound	341	12,9	12,9	90,9
Lost Puck	174	6,6	6,6	97,4
shootout/ penalty shot	68	2,6	2,6	100,0
Total	2653	100,0	100,0	

Dir.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	509	19,2	19,2	19,2
	Forward/ towards to opponents net	1458	55,0	55,0	74,1
	Sideways	339	12,8	12,8	86,9
	Backwards or stop	347	13,1	13,1	100,0
	Total	2653	100,0	100,0	

Readin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	171	6,4	6,4	6,4
	Counter attack when the other team isn't organized	978	36,9	36,9	43,3
	Fast break when opponent is organized (even strength situation)	690	26,0	26,0	69,3
	Slow attack when opponent from scoring	814	30,7	30,7	100,0
	Total	2653	100,0	100,0	

Duration

		Frequency	Percent	Valid Percent	Cumulative Percent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	430	16,2	16,2	16,2
	0- 5 sec.	1142	43,0	43,0	59,3
	5- 10 sec.	989	37,3	37,3	96,5
	10- 15 sec.	81	3,1	3,1	99,6
	15- 20 sec.	8	,3	,3	99,9
	> 20 sec.	3	,1	,1	100,0
	Total	2653	100,0	100,0	

Passes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	474	17,9	17,9	17,9
	1	687	25,9	25,9	43,8
	2	525	19,8	19,8	63,6
	3	305	11,5	11,5	75,0
	4 or more	331	12,5	12,5	87,5
	unable to tell	331	12,5	12,5	100,0
	Total	2653	100,0	100,0	

Situation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	239	9,0	9,0	9,0
	1v. 0 or 2v.0	182	6,9	6,9	15,9
	11	2	,1	,1	15,9
	13	1	,0	,0	16,0
	2 v.1	135	5,1	5,1	21,1
	3 v. 2 or 3 v. 1	89	3,4	3,4	24,4
	1 v. 1 or 2 v. 2 or 3 v.3	531	20,0	20,0	44,4
	Unable to tell	1350	50,9	50,9	95,3
	Odd man rush (underload)	124	4,7	4,7	100,0
	Total	2653	100,0	100,0	

S. Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	71	2,7	2,7	2,7
	Crease	1001	37,7	37,7	40,4
	At the face off circle	944	35,6	35,6	76,0
	Big Circle	323	12,2	12,2	88,2
	Inside of the attack triangle	113	4,3	4,3	92,4
	Outside of the attack triangle	170	6,4	6,4	98,8
	6	30	1,1	1,1	100,0
	7	1	,0	,0	100,0
	Total	2653	100,0	100,0	

Techn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	75	2,8	2,8	2,8
	Deke or breakaway	124	4,7	4,7	7,5
	Wrist shot	1546	58,3	58,3	65,8
	Back Hand	229	8,6	8,6	74,4
	Slap shot	466	17,6	17,6	92,0
	Tip	179	6,7	6,7	98,7
	Other	34	1,3	1,3	100,0
	Total	2653	100,0	100,0	

Way of scoring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	72	2,7	2,7	2,7
	One timer shot (*Tip)	1328	50,1	50,1	52,8
	Recieve a pass and shoot	372	14,0	14,0	66,8
	Receive the puck, short puck control, then shot	350	13,2	13,2	80,0
	Puck control, then shot	342	12,9	12,9	92,9

		Frequency	Percent	Valid Percent	Cumulative Percent
	Breakaway	125	4,7	4,7	97,6
	Walk out	36	1,4	1,4	98,9
	other	28	1,1	1,1	100,0
	Total	2653	100,0	100,0	

Area of net

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	243	9,2	9,2	9,2
	low blocker	544	20,5	20,5	29,7
	low glove	470	17,7	17,7	47,4
	high blocker	382	14,4	14,4	61,8
	high glove	549	20,7	20,7	82,5
	five- hole	465	17,5	17,5	100,0
	Total	2653	100,0	100,0	

Action

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	67	2,5	2,5	2,5
	Rebound	466	17,6	17,6	20,1
	Tip	142	5,4	5,4	25,4
	Own Net	9	,3	,3	25,8
	Direct goal on net / no supportive action	1969	74,2	74,2	100,0
	Total	2653	100,0	100,0	

Bottom ranked teams

GET FILE='G:\Thesis data sets\putting together bottom teams\NHL_Goal analysis_2006-2007 BOS.sav'. FREQUENCIES VARIABLES=TeamA TeamB Rink Homeaway Time Strength @1stgoal Import Differ Result Ju.Williams Position Handed R.Area Way D ir Readin Duration Passes Situation S.Area Techn Wayofscoring Areaofnet Action V29 V30 V31 SJL /ORDER=ANALYSIS.

Frequencies

Notes

	Output Created	01-Feb-2012 13:43:21
	Comments	
Input	Data	G:\Thesis data sets\putting together bottom teams\NHL_Goal analysis_2006-2007 BOS.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	2168
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
	Syntax	FREQUENCIES VARIABLES=TeamA TeamB Rink Homeaway Time Strength @1stgoal Import Differ Result Ju.Williams Position Handed R.Area Way Dir Readin Duration Passes Situation S.Area Techn Wayofscoring Areaofnet Action V29 V30 V31 SJL /ORDER=ANALYSIS.
Resources	Processor Time	0:00:00.063
	Elapsed Time	0:00:00.063

[DataSet1] G:\Thesis data sets\putting together bottom teams\NHL_Goal analysis_2006-2007 BOS.sav

Statistics

		TeamA	TeamB	Rink	Home/away	Time	Strength	1 st goal
N	Valid	2168	2168	2168	2168	2168	2168	2168

62

Statistics

		TeamA	TeamB	Rink	Home/away	Time	Strength	1 st goal
N	Valid	2168	2168	2168	2168	2168	2168	2168
	Missing	0	0	0	0	0	0	0

Statistics

		Import.	Differ	Result	Ju. Williams	Position	Handed	R. Area
N	Valid	2168	2168	2168	2168	2168	2168	2168
	Missing	0	0	0	0	0	0	0

Statistics

		Way	Dir.	Readin	Duration	Passes	Situation	S. Area
N	Valid	2168	2168	2168	2168	2168	2168	2168
	Missing	0	0	0	0	0	0	0

Statistics

		Techn	Way of scoring	Area of net	Action	V29	V30
N	Valid	2168	2167	2168	2168	2168	2168
	Missing	0	1	0	0	0	0

Statistics

		V31	SJL
N	Valid	2168	2168
	Missing	0	0

Frequency Table

Home/away

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Home	1154	53,2	53,2	53,2
	Away	1014	46,8	46,8	100,0
	Total	2168	100,0	100,0	

Time

63

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0- 5 min	148	6,8	6,8	6,8
	5- 10min	183	8,4	8,4	15,3
	10- 15 min	178	8,2	8,2	23,5
	15- 20 min	168	7,7	7,7	31,2
	20- 25min	176	8,1	8,1	39,3
	25-30 min	175	8,1	8,1	47,4
	30- 35 min	176	8,1	8,1	55,5
	35- 40 min	180	8,3	8,3	63,8
	40- 45 min	161	7,4	7,4	71,3
	45- 50 min	169	7,8	7,8	79,1
	50- 55 min	150	6,9	6,9	86,0
	55- 60 min	232	10,7	10,7	96,7
	60- 65 min	30	1,4	1,4	98,1
	shootout	42	1,9	1,9	100,0
	Total	2168	100,0	100,0	

Strength

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Even Strength	1397	64,4	64,4	64,4
	Power Play	535	24,7	24,7	89,1
	Power Play +2	59	2,7	2,7	91,8
	Short Handed	79	3,6	3,6	95,5
	Short Handed -2	2	,1	,1	95,6
	6 v.5 team without added attacker scores	46	2,1	2,1	97,7
	Shootout	42	1,9	1,9	99,6
	Power play empty net	6	,3	,3	99,9
	Short Handed empty net	2	,1	,1	100,0
	Total	2168	100,0	100,0	

1 st goal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	1798	82,9	82,9	82,9
	Yes	370	17,1	17,1	100,0

Import.

		Frequency	Percent	Valid Percent	Cumulative Percent
Total	2168	100,0	100,0		19,4
	Game winning goal	223	10,3	10,3	29,7
	Go ahead goal +1	571	26,3	26,3	56,0
	Go ahead goal +2	291	13,4	13,4	69,4
	Tying goal	426	19,6	19,6	89,1
	bring within one point -1	237	10,9	10,9	100,0
	Total	2168	100,0	100,0	

Differ

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	988	45,6	45,6	45,6
	2	446	20,6	20,6	66,1
	3	450	20,8	20,8	86,9
	4	207	9,5	9,5	96,4
	5	45	2,1	2,1	98,5
	6	12	,6	,6	99,1
	7	9	,4	,4	99,5
	8	11	,5	,5	100,0
	Total	2168	100,0	100,0	

Result

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	764	35,2	35,2	35,2
	1	240	11,1	11,1	46,3
	2	261	12,0	12,0	58,3
	3	903	41,7	41,7	100,0
	Total	2168	100,0	100,0	

Position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Center	677	31,2	31,2	31,2
	Right winger	602	27,8	27,8	59,0
	Left winger	604	27,9	27,9	86,9
	Defender	285	13,1	13,1	100,0
	Total	2168	100,0	100,0	

Handed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Right shooter	884	40,8	40,8	40,8
	Left shooter	1284	59,2	59,2	100,0
	Total	2168	100,0	100,0	

R. Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	559	25,8	25,8	25,8
	Defensive zone down low	111	5,1	5,1	30,9
	Defensive zone middle	251	11,6	11,6	42,5
	Defensive side in the neutral zone	91	4,2	4,2	46,7
	Offensive side in the neutral zone	130	6,0	6,0	52,7

		Frequency	Percent	Valid Percent	Cumulative Percent
	Offensive zone middle	671	31,0	31,0	83,6
	Offensive zone down low	355	16,4	16,4	100,0
	Total	2168	100,0	100,0	

Way

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	657	30,3	30,3	30,3
	Face Off	108	5,0	5,0	35,3
	Steal the puck	413	19,0	19,0	54,3
	Intercept a pass	172	7,9	7,9	62,3
	Opponent makes a mistake	250	11,5	11,5	73,8
	Shot out of defensive zone	55	2,5	2,5	76,3
	Shot out of neutral zone	29	1,3	1,3	77,7
	After Shooting / Rebound	321	14,8	14,8	92,5
	Lost Puck	118	5,4	5,4	97,9
	shootout/ penalty shot	45	2,1	2,1	100,0
	Total	2168	100,0	100,0	

Dir.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	?	1	,0	,0	,0
	Unable to tell	392	18,1	18,1	18,1
	Forward/ towards to opponents net	1202	55,4	55,4	73,6
	Sideways	288	13,3	13,3	86,9
	Backwards or stop	285	13,1	13,1	100,0
	Total	2168	100,0	100,0	

Readin

		Frequency	Percent	Valid Percent	Cumulative Percent

Valid		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	141	6,5	6,5	6,5
	Counter attack when the other team isn't organized	826	38,1	38,1	44,6
	Fast break when opponent is organized (even strength situation)	578	26,7	26,7	71,3
	Slow attack when opponent from scoring	623	28,7	28,7	100,0
	Total	2168	100,0	100,0	

Duration

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	345	15,9	15,9	15,9
	0- 5 sec.	972	44,8	44,8	60,7
	5- 10 sec.	768	35,4	35,4	96,2
	10- 15 sec.	74	3,4	3,4	99,6
	15- 20 sec.	7	,3	,3	99,9
	> 20 sec.	2	,1	,1	100,0
	Total	2168	100,0	100,0	

Passes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	436	20,1	20,1	20,1
	1	575	26,5	26,5	46,6
	2	425	19,6	19,6	66,2
	3	236	10,9	10,9	77,1
	4 or more	226	10,4	10,4	87,5
	unable to tell	270	12,5	12,5	100,0
	Total	2168	100,0	100,0	

Situation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	222	10,2	10,2	10,2
	1v. 0 or 2v.0	153	7,1	7,1	17,3
	11	1	,0	,0	17,3
	2 v.1	113	5,2	5,2	22,6
	3 v. 2 or 3 v. 1	58	2,7	2,7	25,2
	1 v. 1 or 2 v. 2 or 3 v.3	427	19,7	19,7	44,9
	Unable to tell	1096	50,6	50,6	95,5
	Odd man rush (underload)	98	4,5	4,5	100,0
	Total	2168	100,0	100,0	

S. Area

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	80	3,7	3,7	3,7
	Crease	812	37,5	37,5	41,1
	At the face off circle	755	34,8	34,8	76,0
	Big Circle	246	11,3	11,3	87,3
	Inside of the attack triangle	98	4,5	4,5	91,8
	Outside of the attack triangle	150	6,9	6,9	98,8
	6	27	1,2	1,2	100,0
	Total	2168	100,0	100,0	

Techn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	81	3,7	3,7	3,7
	Deke or breakaway	104	4,8	4,8	8,5
	Wrist shot	1284	59,2	59,2	67,8
	Back Hand	186	8,6	8,6	76,3
	Slap shot	333	15,4	15,4	91,7
	Tip	164	7,6	7,6	99,3
	Other	16	,7	,7	100,0

Techn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	81	3,7	3,7	3,7
	Deke or breakaway	104	4,8	4,8	8,5
	Wrist shot	1284	59,2	59,2	67,8
	Back Hand	186	8,6	8,6	76,3
	Slap shot	333	15,4	15,4	91,7
	Tip	164	7,6	7,6	99,3
	Other	16	,7	,7	100,0
	Total	2168	100,0	100,0	

Way of scoring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	80	3,7	3,7	3,7
	One timer shot (*Tip)	1089	50,2	50,3	53,9
	Recieve a pass and shoot	301	13,9	13,9	67,8
	Receive the puck, short puck control, then shot	290	13,4	13,4	81,2
	Puck control, then shot	264	12,2	12,2	93,4
	Breakaway	87	4,0	4,0	97,4
	Walk out	29	1,3	1,3	98,8
	other	27	1,2	1,2	100,0
	Total	2167	100,0	100,0	
Missing	System	1	,0		
	Total	2168	100,0		

Area of net

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	238	11,0	11,0	11,0
	low blocker	408	18,8	18,8	29,8
	low glove	409	18,9	18,9	48,7

		Frequency	Percent	Valid Percent	Cumulative Percent
	high blocker	302	13,9	13,9	62,6
	high glove	459	21,2	21,2	83,8
	five- hole	352	16,2	16,2	100,0
	Total	2168	100,0	100,0	

Action

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unable to tell	77	3,6	3,6	3,6
	Rebound	425	19,6	19,6	23,2
	Tip	122	5,6	5,6	28,8
	Own Net	11	,5	,5	29,3
	Direct goal on net / no supportive action	1533	70,7	70,7	100,0
	Total	2168	100,0	100,0	