

Frequently Asked Question #1: +/-

The concept of Plus/Minus is not a new one - the **Montreal Canadiens** started collecting it 50 years ago, and it became an official stat when the NHL expanded to 12 teams in 1967-68. But +/- doesn't tell us everything about a player - someone who's on the ice for five goals for and five goals against gets the same +/- as someone who's on the ice for no goals. The statistical reports at **Behind the Net** allow you to distinguish between those two players.

After the jump - who was on the ice for the most and fewest goals, for and against, at 5-on-5 in 2008-09:

The owner of the highest positive rate is not surprising in the least, while the worst negative rate belongs to a **Phoenix Coyotes** player:

Highest Goals For Rate: **Pavel Datsyuk** +4.28/60 minutes - **complete list**

Highest Goals Against Rate: **Enver Lisin** -3.81/60 minutes - **complete list**

And what about +/- per 60 minutes? **Michael Ryder**, +2.18/60 minutes - **complete list**

One of the weaknesses of traditional +/- is that it tends to favor players on good teams - **Bruins** **Ryder**, **Blake Wheeler**, **David Krejci**, **Phil Kessel** and **Marc Savard** were all in the top ten in the league, which is not surprising given that Boston was the highest-scoring team at 5-on-5 in the NHL. At the same time, it penalizes players on bad teams - six **New York Islanders** were in the bottom 10.

We can make a small improvement on +/- by subtracting the +/- when a player is off the ice from it. That is, if a player was +1 goal per 60 minutes on the ice and his team was even when he was off, he ends up appearing the same as a guy who was even on the ice while his teammates were -1 per 60 minutes. It's not perfect,

but it does make an adjustment for how good a player's teammates were. This statistic has several names - relative +/-, On-Ice/Off-Ice +/-, or simply "Rating", as I've called it on the stats page.

With this adjustment, Pavel Datsyuk still looks good, but **Patrik Berglund**, who had a good season on an ok team, vaults to the top. The Bruins are still there, a bit further down, while good players on bad teams, like **Mark Streit**, get pulled up. **Complete list**

The most egregious problem with this statistic shows up at the bottom of the list - the bottom four were **Jay Pandolfo**, **Rob Niedermayer**, Sammy Pahlsson and **Travis Moen**, who have all been sought after during their careers for their defensive ability. I'll discuss how we assess the performance of defensive forwards in a future post.

Frequently Asked Question #2: Quality of Competition statistics

I hope you enjoyed **part 1** of the Frequently Asked Questions at **Behind the Net**. I'd like to discuss the second-most common question I get about the site: what exactly is **Quality of Competition**, or QualComp?

The basic idea is this: we want to characterize the characteristics of the opponents that a particular player lines up against.

There are numerous ways we could go about this. We could average out the points-per-game of opposing players(as **Jonathan Willis has suggested**, and which works reasonably well, particularly when you have no ice time information), but I think the best place to start is with what I called "Relative +/-" or "**Rating**" in **part 1**. Relative +/- adjusts a player's on-ice +/- relative to his team's +/- while he was off the ice. In general, it corrects for the boost players get from playing on a good offensive team and vice-versa.

If we average that rating across all of a player's opponents, weighting for how much time they played against one another, then we have an estimate of how good a player's opponents were relative to their teams. In a general sense, first line players have the best ratings, so players who play against the first line should see the highest opponent rating. That average opponent rating is the "Quality of Competition" faced by a given player.

Here's a worked example from 2006-07:

If you lined up against Anaheim's top line, you'd get:

Name	Pos	Team	#	Rating/On/Off +/-
KUNITZ	F	ANA	14	+1.97
SELANNE	F	ANA	8	+1.65
PRONGER	D	ANA	25	+1.61
MCDONALD	F	ANA	19	+0.94
NIEDERMAYER	D	ANA	27	-0.31

The Quality of Competition would be the average of 1.97, 1.65, 1.61, 0.94 and -0.31, which is $5.86/5 = +1.17$.

So now that we have the preliminaries out of the way, what does Quality of Competition tell us? Take a look at the 2007-08 list: **Quality of Competition for 2007-08**. Niedermayer, Pahlsson and Moen are 1/2/3, reflecting their usage as the increasingly rare "checking line" in Anaheim. **Jay Pandolfo** is 4th among forward, **Mikko Koivu** 5th, and **John Madden** 6th. In 2006-07, Madden and Pandolfo were #1 and #2. Nick Lidstrom's always in the top 10 too. Basically, Quality of Competition tells us if players were used overwhelmingly against top competition, and it gives us another data point we can use to adjust a player's very high (or very low) +/-.

One of my favorite uses for it is to look at a team I don't know a whole lot about, and see what it says about defensive pairings and usage. For example, the 2008-09 LA **Kings**:

	GP	5v5 TOI
Doughty	81	16:14
Greene	82	15:55
Johnson	41	15:46
O'Donnell	82	15:41
Quincey	72	15:20

Five guys, all within one minute of each other in terms of 5v5 ice time. On many teams, it's obvious who the #1 and #2 D are because they log much more ice time than other players - both against other teams' good players and against not-so-good ones. But if we add Quality of Competition to the mix:

	GP	5v5 TOI	QualComp
Doughty	81	16:14	0.037
Greene	82	15:55	-0.003
Johnson	41	15:46	0.016
O'Donnell	82	15:41	0.049
Quincey	72	15:20	-0.025

Now it makes more sense. The #1 pairing was Doughty-O'Donnell, though if Johnson hadn't been injured, he might have had more time on the first unit. **Matt Greene** is clearly the #4 D, and **Kyle Quincey** is #5. And this is generally consistent with how they were used last season. On most teams, this method works out very well, though it's reflective of how the coach sees the player, and not necessarily of what the player's abilities are.

Frequently Asked Questions #3: What is a Corsi Number?

I hope you've had a chance to read **Part 1** and **Part 2** of the statistical FAQ I've been working on. Part 3 will focus on a statistic that **Oilers** blogger **Vic Ferrari** picked up on several years ago: the "**Corsi Number**." The statistic itself likely comes from inside the **Buffalo Sabres** organization, and their goaltending coach, **Jim Corsi**, has received credit for it.

In a nutshell, the Corsi Number is the shot differential while a player was on the ice. This includes not just goals and shots on goal, but also shots that miss the

net, and in some formulations, blocked shots. In other words, it's the differential in the total number of shots directed at the net.

This metric was presumably adopted by the Sabres because it's a better indicator of a team's play than goals for and against, which are highly-driven by factors outside of a team's control. Shot volume is much more a function of a team's ability, and a much better predictor of future performance than goal-scoring metrics - in other words, there is basically no such thing as a team that shoots efficiently, just teams that get a lot of shots on goal...or not. Tyler Dellow has much more on this subject **here**. And Vic Ferrari discusses the "consistency" that underlies **goal scoring, scoring chances and the Corsi Number**.

You can see the 2008-09 Corsi leaders **here**. Anaheim's Perry/Getzlaf/Ryan unit was the best relative to their teammates, while Detroit's top two lines and anyone who played with Alexander Ovechkin were at the top of the raw numbers. At the bottom end, we had a bunch of **Islanders** and **Coyotes** leading the raw numbers, while the worst relative Corsi belonged to, **unsurprisingly, Travis Moen, Rob Niedermayer, Jay Pandolfo**, Sami Pahlsson and **John Madden**. The **2007-08 numbers** don't look a whole lot different, with Detroit and Washington at the top again, while LA and Atlanta were at the bottom.

Frequently Asked Questions #4: Penalty +/-

We've always known that some players have the skills to draw penalties, but it's only recently that the NHL has rigorously recorded their identities (not that the total numbers are posted on the stats pages at NHL.com or any other major commercial stats site, but that's another story). And of course, some players, like Daniel Carcillo or **Jarkko Ruutu**, draw lots of penalties but commit many more themselves. It should go without saying that if it's good news for your team that you're going to the box with someone else, then you are not one of the best players on your team.

The skill I'd like to highlight today is "drawing non-coincidental penalties." In other words, I'd like to look at players who force other players into taking penalties, but don't take them themselves. There is one player who's so good at this that he led the 2nd place guy in the league by 70% at 5-on-5 this past season. Think about that for a second - that's a huge gap in performance. Alexander Ovechkin took a ridiculous number of shots last year - 528 - which is the second-most ever behind Phil Esposito's surly 550 in 1970-71. And yet Ovechkin was only 42% ahead of second-place **Eric Staal**. Wayne Gretzky had 92 goals in 1981-82 and Mike Bossy was second with 64 - that's still only 44%.

The guy with the outer-worldly penalty drawing talent is none other than the **Los Angeles Kings' Dustin Brown**. Brown drew 49 more minor penalties at 5-on-5 in 2008-09 than he took - far ahead of second-place **Cal Clutterbuck**, who had 29, and **Jarome Iginla**, who had 28. (The complete lists of players by penalties drawn per 60 minutes are available here for **2007-08** and here for **2008-09**.)

For such an unheralded stat, it certainly is valuable. Those 49 extra penalties that Brown drew (which doesn't include penalties he drew while killing penalties himself or to turn a 5-on-4 into a 5-on-3) were worth approximately 10 goals - or more than +1.5 wins. The average value of a top two forward is +1.4 wins, so if Brown did nothing else while he was on the ice, like score 24 goals, he would be one of the top 30 or 40 forwards in the league. When you combine his accomplishments last season, he was probably one of the ten-most valuable forwards in the league. And yet if you go to any mainstream hockey stats site, you can't find out anything about a player's talent for drawing penalties.

Frequently Asked Questions #5: Goals and Points per 60 Minutes

One of the important contributions that baseball analysts made to the world of sports was to stress the importance of rate statistics and context. When Andre Dawson hit 49 home runs in 1987, the sabermetricians of the day pointed out that Dawson had used 448 outs to get there (a lot) and played his home games at Wrigley Field, which inflated his hitting stats. If you don't pay attention to how

many opportunities a player had and when he got them, you could convince yourself he's a lot better or worse than he really is (if you ever read **Oilers** blogger **Lowetide**, he often talks about a hockey player getting some "at-bats" - the requisite opportunity to make a decision on his performance.)

So when you look at a player's most basic statistics - goals and assists - that you understand how these stats came to be. For example, not to pick on anyone in particular, but Tom Kurvers sticks out in my mind as an offensive defenseman. But Kurvers got 54% of his points on the power-play, even though he spent no more than 20% of his ice time on the PP, and probably less. If we shifted Kurvers from 4 minutes on the power-play to 4 minutes on the penalty-kill, he would have had a completely different career. This is not to say you would do that - not with his offensive skills - but context is a big factor.

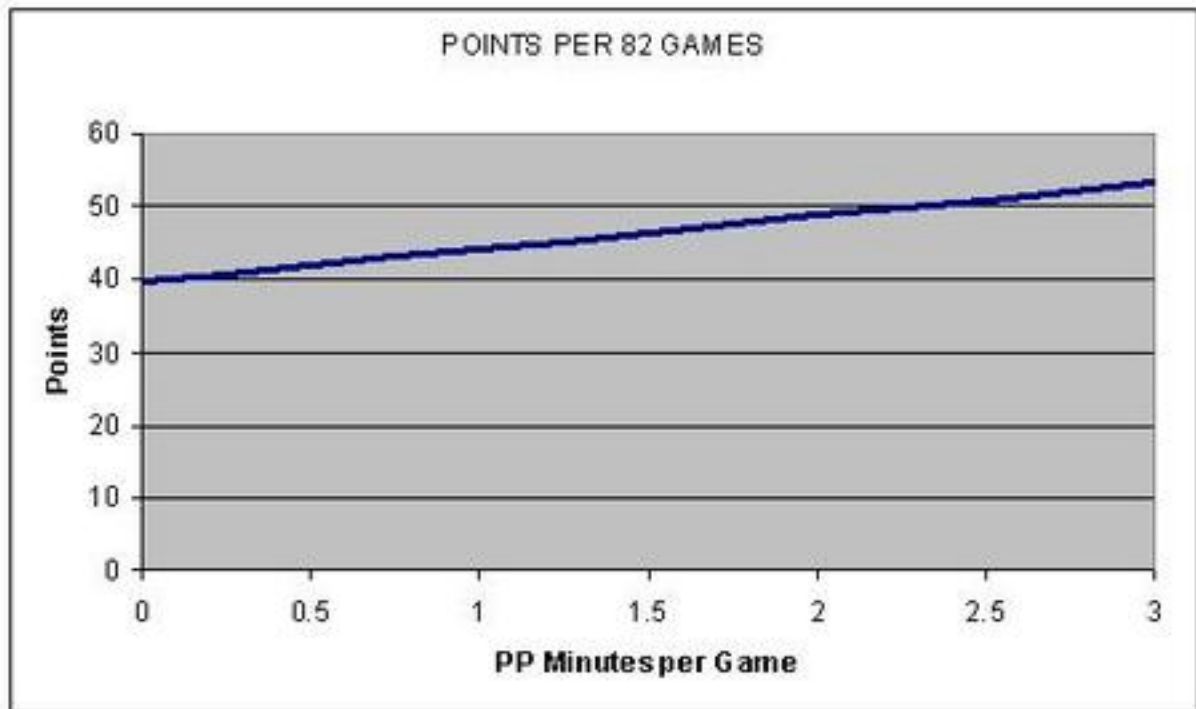
We now also know how much ice time every single player gets, which allows us to turn this general understanding of context into rate statistics. Here are the scoring statistics per 60 minutes for forwards and defensemen at 5-on-5 and 5-on-4 last season: (A1 - denotes first assists, A2 - denotes second assists)

	G	A1	A2	P
D 5-on-5	0.15	0.24	0.33	0.72
F 5-on-5	0.76	0.63	0.41	1.80
D 5-on-4	0.76	1.23	1.26	3.25
F 5-on-4	1.57	1.28	1.11	3.96

The first thing that jumps out at you is the huge jump in defense scoring on the power-play. While forwards put up points at a little more than twice the rate they do at 5-on-5, defensemen have a 4.5x increase. This shows up particularly in goals and first assists - defensemen are simply not directly involved in most even-strength offensive play. You could also draw a proverbial "line in the sand" and say that a forward who contributes less than 4 points per 60 minutes on the PP, particularly on the first unit, is not cutting it offensively, even if he gets a lot of ice time and has a high point total as a result.

You can see the overall rate stats for 2008-09 at 5-on-5 [here](#) and for 5-on-4 [here](#). At 5-on-5, #2 through #14 don't surprise me in the least. But **Rene Bourque** #1 in the league in Pts/60 at 5-on-5? Looking at his raw stats - 40 points in 58 games, it would never occur to me. But Bourque was on Calgary's third PP unit and never got the chance to rack up gaudy stats with a man-advantage. Similarly, who would have known that **Andrew Ebbett** had six power-play goals in just 89 minutes on the ice, giving him the highest power-play goal rate in the league?

I think it's instructive to look at what would happen if we had a forward who played 18 minutes a game and was completely average at even-strength, on the power-play and on the PK. If we take him from 15 minutes ES/3 minutes PK to 15 minutes ES/3 minutes PP, we see a completely different player:



The guy who kills penalties is looking at a 40-point season, while the guy who plays the power-play gets 53 points. Same guy - 34% difference in scoring - all due to context.

Frequently Asked Questions #6: Scoring Chances

For many people, their initial reaction to the notion of statistics in hockey is that they're not really instructive - the game, after all, is fluid, with many different interactions between players, which can't be captured by the kind of static analysis you get from a scoresheet. NHL teams know that, and yet they spend a lot of time watching video - so that they can count up who was responsible for generating scoring chances, both for and against. They count passes, breakouts, missed and made defensive assignments. You name it. Call it what you want, but if you watch game film and count something, that makes it a statistic as shot location or +/-.

Now, for whatever reason, the NHL does not make scoring chances publicly-available. But guys like David Staples at the Edmonton Journal and Dennis King, who contributes to **Tyler Dellow's site**, were sufficiently dissatisfied by that lack of data that they started subjectively recording every scoring chance or "**error**" that occurred during **Oilers** games. (That's a lot of hockey to watch.) The results have **been great so far**, and this season, the entire NW division will be covered, along with various other teams throughout the league.

It's hard to overstate how big this is. **Project Scoresheet** and **Retrosheet** have, between them, changed the way baseball games are scored, and reconstructed the long-lost past. All through the efforts of a bunch of volunteers. And when we have scoring chances recorded across the league - and analyzed to determine what they mean to wins and losses - fans will come to view the game very different in the next few years.