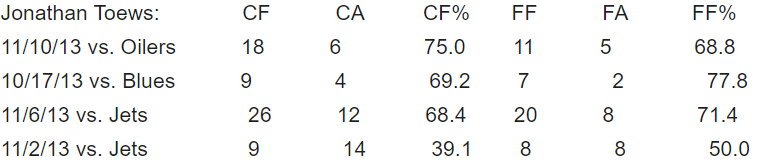
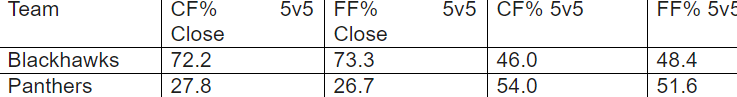
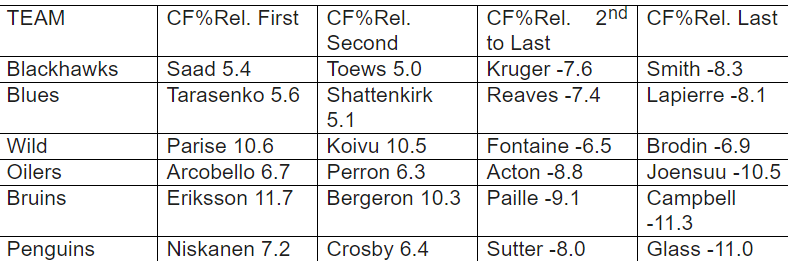
## Stats Made Simple Part 1: Corsi & Fenwick

* Advanced stats/metrics/analytics = initial stages of a movement to bring hockey analysis into modern era.
* Antiquated measures hockey has relied upon since Dark Ages (Plus/Minus (+/-)) = outdated + coming under heavy fire via a realization that there’s a lot more to hockey than simply being on the ice when a goal is scored.
* Better name = “**expanded metrics**” b/c most data being used has been available for a long time.
* \*\**The way* data (like shots + time on ice (TOI) are employed = where growth/expansion comes in\*\*\*
* So, while @ face value, expanded metrics may seem intimidating/too complicated, ***they really are not***
* Don’t have to be an expert in “fancy stats” to grasp their meaning, as many are as simple as BA or OBP in baseball, but b/c they’re relatively new, fans just need a little education.
* Many sports fans = familiar w/ football + at least some elementary stats used to keep track of a team’s performance.
* Time of possession (TOP) = 1 more commonly used simple metric = how long team’s offense controlled ball during a game.
* Obviously, team has a better chance of scoring if controlling the ball.
* In football, rigid structure of the game w/ offense on the field vs. opponent’s defense makes this stat easy to track.
* **In hockey, this is not so easy to do ==** more fluid w/ offensive + defensive players on the ice @ the same time, **but like football, a team = more likely to score when they have the puck (possession) than when stuck in the defensive zone.**
* Apart from teams of people watching skaters w/ timers to determine how long each has the puck, a way to track TOP in hockey = **Corsi** and **Fenwick**.
* **\*\*\*Corsi = shots on goal + missed shots + blocked shots\*\*\***
* basically uses every shot toward the goal throughout the game
* **\*\*\*Fenwick = shots on goal + missed shots\*\*\***
* measures the same thing as Corsi *but excludes blocked shots*.
* Essentially, in order **to shoot the puck**, you **must possess the puck**.
* Since we do not have the tech or another practical way to measure TOP in hockey, must employ a proxy.
* Expanding stats we use to understand a player’s/team’s performance in the past, present, + future opens doors to analyzing the game in all new ways.
* If we can ID trends in #’s, we can predict w/ *some degree of confidence* what’ll happen in the future
* We can determine progress made by teams/players in different areas of the game, figure out if a team’s early season success is built to last for duration of a season or just riding coattails of some hot goal tending.
* **Possibilities = as many + varied as the user wants them to be**.
* Metrics != first + last line of analyzing hockey 🡺 cannot stop watching games + rely solely upon stats
* *but they do enhance our hockey experience.*
* Both Corsi + Fenwick = counted as *“For” or “Against”.*
* “For” = a shot or event that happens while player is on the ice that is *on behalf of his team*
* “Against” = same but for opposing team.
* Both can be applied *team-wide* or *by player*.
* In general, **Fenwick = usually regarded as better indicator over a longer period of time vs. Corsi = better indicator over a shorter period of time.**
* Example: Patrick Kane is on ice for 10 shots on behalf of his team + opposing team takes 3 shots while Kane is on the ice during the game.
* **Corsi For (CF) = 10 Corsi Against (CA) = 3 Kane = a +7 Corsi (10 – 3 = 7) on the night.**
* Let’s say of the 10 shots Kane was on the ice for, *2 were blocked* by players on opposing team.
* Opposing team had 3 shots while Kane was on the ice but *1 was blocked.*
* B/c *Fenwick excludes blocked shots*, Kane’s numbers would look like this:
* **Fenwick For (FF) = 8 Fenwick Against (FA) = 2 Kane = +6 Fenwick (8 – 2 = 6) on the night**
* To make this data easier to use, statisticians express a player or team’s #’s as a %.
* **CF% (Corsi For Percentage) + FF% (Fenwick For Percentage)** can be easily compared among players, teams, + games.
* Example:([www.extraskater.com](http://www.extraskater.com))
* Remembering **Corsi event = any shot toward the goal** (SOG – Shots on Goal, Missed Shots, Blocked Shots), we see Toews’ Corsi For (CF) varies greatly over these games, as does his Corsi Against (CA)
* **Focusing on these #’s *alone* could be misleading for sake of comparing his performance w/ other players throughout the league, teammates, or even own play from game to game.**
* **\*\*\*Using Corsi For Percentage (CF%) allows us to see how the #’s work together + remove game-to-game variables that would otherwise be misleading or confusing.\*\*\***
* Performance against the Blues (10/17/13) + Jets (11/2/13) = both a CF = 9, but when CA is factored in + translated into a %, see just how different those performances really were.
* **Posted very good #’s (i.e. had a good possession game) @ 69.2% against Blues but had a disappointing 39.1% against Jets.**
* When we remove blocked shots, Fenwick #’s take over.
* Toews’ best Corsi game = 3rd in Fenwick.
* Even the “bad game” in Corsi terms (Jets 11/2/13) was a decent showing @ 50.0% when viewed from perspective of FF%.
* CA = 14 becomes FA = 8 due to Blackhawks blocking 6 shots while Toews was on the ice.
* Using Corsi and Fenwick, particularly CF% and FF%, is just the beginning of the expanded metrics possibilities available to us
* Many fans like to see #’s just to confirm what was observed of a certain player/line during a game, others dive deep for more detailed analysis.
* However you choose to use them, if expanded stats enhance experience as a fan of the game, it sounds like a positive outcome/
* Hockey fans = going through a learning process b/c expanded metrics = relatively new to the game.

## Stats Made Simple Part 2: Score Close & Score Effects

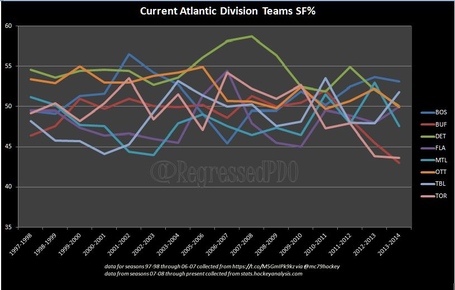
* Game = normally played w/ 5 skaters + 1 goalie == **5v5** or some other similar variation.
* When team takes a penalty + goes on Penalty Kill (PK) may see **4v5**/**Shorthanded** + occasionally **3v5**
* When opponent takes a penalty, team who drew the penalty = awarded a **Power Play (PP)** = **5v4, Man Advantage,** etc.
* **Even strength = any situation when both teams have the same number of players on the ice.**
* **\*\*\*For purposes of advanced stats, best of the above situations to use is 5v5\*\*\***
* **\*\*\*PK, PP, 4v4 = *NOT* considered to be truly representative of a team’s strengths/weaknesses over time\*\*\***
* Point of these metrics = judge a team’s/player’s performance over time + get an idea of what to expect in the future.
* Cannot happen w/out being able to filter out noise + focus on game situations that give clearest results
* To filter out **Score Effects**, statisticians focus on 5v5 performance when score is close.
* **Score Close** = defined as a score that’s tied (*including 0-0*) or w/in 1 goal in the 1st or 2nd period.
* \*\*\*In the 3rd period, score is only considered close when tied\*\*\*
* For those familiar w/ science/research, consider **5v5 Close** (**5 on 5 Score Close**) to be the "control" in this study
* All other situations that arise during the game (PK, PP, etc.) should be considered **experimental variants**.
* In any statistical discussion, \*\*\*sample size is always a concern\*\*\*, so why make the already limited (5v5) pool of data even smaller? 🡺 b/c "**Score Effects**".
* **Score Effects** take over when a team has a lead > 1 goal, *particularly late in the game*.
* Often, team w/ the sizeable lead goes into defensive mode instead of continuing to press offensive attack (think "prevent" defense)
* *Defensively-minded style of play often allows trailing team to make a push offensively = leads to more shots + thus higher possession + offensive zone time for attacking (trailing) team.*
* Further, teams trailing as game gets closer to end tend to throw caution to the wind in efforts to score, **contributing further to disparity in shot attempts** (like to onside kicks, trick plays, Hail Mary)
* *When Score Effects are @ work, tend to see leading team taking defensive zone penalties*.
* Ex: 3rd period of Blackhawks game vs. Stars on December 10, 2013
* Blackhawks had a 5 – 0 lead in the 2nd period, Stars scored + suddenly shot attempts quickly escalated until end of period, bringing 5v5 possession #’s up dramatically.
* In the 3rd, Stars spent a substantial amount of time in the offensive zone = led to 3 penalties taken by Blackhawks forwards, including 1 delay of game penalty (puck over glass) + 2 hooking penalties.
* Stars then enjoyed 3 PP in the 3rd alone, *furthering driving up shot attempts.*
* Practical example of Score Effects: Blackhawks vs. Panthers on December 8, 2013.
* Blackhawks dominated play early in 1st, leading to 2 goals.
* Early goal for Blackhawks in 2nd led to Panthers playing more aggressive offensively
* Panthers scored 2 in the 2nd, **bringing** **the score back to being “close”**.
* Blackhawks scored again [4-2] for remainder of the 2nd
* In the 3rd, Blackhawks scored a PP goal early, making the score 5-2.
* Following that goal, Panthers had 31 shot attempts to Blackhawks 8, + 11 Panthers shots came on 2 PP’s from penalties against the Blackhawks (interference + holding).
* Still leaves 20 shot attempts @ 5v5 = far more than the leading team attempted, a standard example of Score Effects.



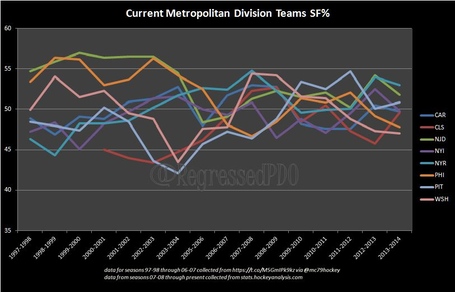
* As you can see from the table above, when score was close (*sans Score Effects*) Blackhawks dominated possession.
* W/ the score filter removed, the Panthers had better possession #’s than the Blackhawks, thus demonstrating the effect of Score Effects on shot attempts + style of play.
* **Once variants are removed, Corsi + Fenwick = much more reliable over time as analytical tools.**
* **CF% + FF% = useful in comparing teams + players across the league, + even game by game.**
* Many fans get an idea from watching the game as to which forward line or defensive pairing had the best performance of the night.
* Comparing players + line combos on a team = aided by adjusting CF% + FF% values to make them **Relative**
* \*\*\***CF% Relative and FF% Relative**\*\*\* allow us to see how a player stacks up against teammates.
* **Relative values** tell us how a team performs when a player is on the ice.
* If positive, team performed better (more shot attempts/higher possession #’s) w/ player on the ice than off.
* If negative, team performed better when player was off ice
* **Relative *Percentages*** do NOT mean certain players are good + others are not good.
* many factors affect these #’s, such as **Quality of Competition** + **Zone Starts**
* What we’re really looking = **strength of performance** 🡪 use this info to determine where strengths + weaknesses of a team are located.
* If team’s checking line consistently has better Relative #’s than the offensively gifted 2nd line, perhaps the usage + deployment of the line needs to be revisited.
* *Further, large disparities between a team’s lines may indicate a team w/ less forward depth or heavily front loaded lines.*
* Some teams in terms of CF% Rel (5v5):
* Distribution such as that seen from the Blackhawks + Blues = representative of many teams, in that Relative #’s = fairly evenly spread out
* Bruins = much wider distribution, as do the Penguins, + Wild = similar to these 2 as well.
* Distribution of a team's Relative possession #’s = heavily dependent upon *not only depth of talent* but *also* ***Usage*** *+* ***Deployment*** *of players*.
* \*All statistical data gathered via [www.extraskater.com](http://www.extraskater.com)

## Using Shots For Percentage

* **Possession statistics** + the data that allows us to use them only reach back to the 2007-2008 season.
* Prior, total shot attempts were not tracked + cataloged into a usable format, thus making the task of taking a statistical look @ team's past performances very difficult.
* 1 method used to get a *general* idea of team's overall possession game = **Shots For Percentage (SF%)**
* **Shots for + Shots against** in a game = 100%, + a team's Shots For are then turned into a % of shots taken in a game.
* A team has to have the puck to shoot it, so w/out more expansive data prior to 2007-2008, *must make what we can of the data we have.*
* **SF% can be used to *gauge* puck possession**.
* More a team possesses puck = more chances to score + thus win.
* **SF% does NOT tell the whole story b/c obviously, a hot goaltender can steal a playoff series, but it is a useful tool**
* Recently, Tyler Dellow (@mc79hockey) publicly shared a [spreadsheet](https://docs.google.com/spreadsheet/ccc?key=0AuFrjZE8ZySpdDZpclc4TG5qX3RjczhpbUtDNHFpX1E#gid=0) w/ SF% for all NHL teams back to 1997-1998 season (further than any other info we have previously had convenient access to + thus can give some insight into history of a team's puck possession game)
* Using that data:

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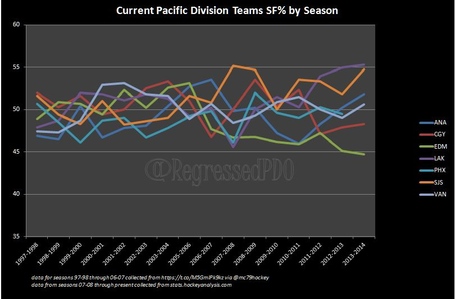
* Dominance of [Detroit Red Wings](http://www.sbnation.com/nhl/teams/detroit-red-wings) = obvious for over a decade, + *no surprise that other teams, such as* [*Blackhawks*](http://www.sbnation.com/nhl/teams/chicago-blackhawks)*, have patterned their game after this team.*
* Rather precipitous drop of possession game for the [Maple Leafs](http://www.sbnation.com/nhl/teams/toronto-maple-leafs) is astounding.
* For years, they hovered ~50%, but since 2009-2010 season, possession game indicators have dropped like a stone.
* Dramatic spike for [Tampa Bay Lightning](http://www.sbnation.com/nhl/teams/tampa-bay-lightning) coincides w/ their [Stanley Cup](http://www.sbnation.com/nhl-playoffs) winning season in 2003-2004

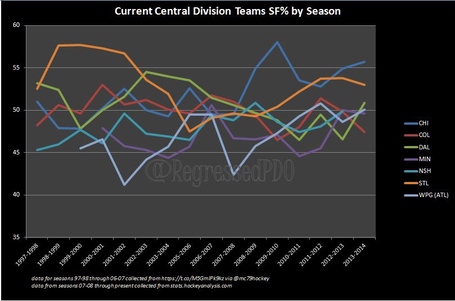
[](http://cdn3.vox-cdn.com/assets/4227583/metro_sf_.JPG)

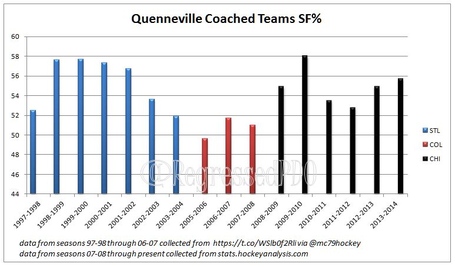
* Both [Capitals](http://www.sbnation.com/nhl/teams/washington-capitals) + [Penguins](http://www.sbnation.com/nhl/teams/pittsburgh-penguins) bottomed out in 2003-2004 + spiked up quickly thereafter = [Ovechkin](http://www.sbnation.com/nhl/players/54337/alex-ovechkin)

drafted in 2004 + [Crosby](http://www.sbnation.com/nhl/players/55428/sidney-crosby) the following season.

* [Devils](http://www.sbnation.com/nhl/teams/new-jersey-devils) early dominance, drop, + slow resurgence in SF% is also notable here.
* This division now seems to be getting more tightly grouped on the possession spectrum (2013)

[](http://cdn1.vox-cdn.com/assets/4227591/pacific_sf_.JPG)

* [Oilers](http://www.sbnation.com/nhl/teams/edmonton-oilers) continue on long road toward a rebuild of former powerhouse position.
* [Kings](http://www.sbnation.com/nhl/teams/los-angeles-kings) have really shot skyward in terms of SF% + currently lead the NHL in this metric, as well as FF%
* [Sharks](http://www.sbnation.com/nhl/teams/san-jose-sharks) are also sustaining their offensive dominance.
* Pacific teams seem to be spreading out to reveal a serious lack of parity in the division (should come as no shock to anyone)
* [](http://cdn3.vox-cdn.com/assets/4227607/central_season_sf_.JPG)
* Central = bit more spread out over time than other divisions.
* Obviously, these teams have not been playing each other as divisional foes for all of this time, but dominance of the [Blues](http://www.sbnation.com/nhl/teams/st-louis-blues) + Blackhawks for past several seasons is striking.
* This also leads to another point of interest 🡺 early years on this chart (in which Blues were dominant, middle years wherein [Avalanche](http://www.sbnation.com/nhl/teams/colorado-avalanche) were near the top, + last several years where Blackhawks dominate possession), all have 1 thing in common: ***the coach of each of those teams***

[](http://cdn3.vox-cdn.com/assets/4227623/Q_SF_.JPG)

* Joel Quenneville has coached the Blues, Avalanche, + Blackhawks
* SF% for each season of his coaching career are above.
* Only 1 team (2005-2006 Avalanche) finished season w/ < 50% SF%.
* This track record = very impressive + it’s obvious Quenneville has good grasp on coaching puck possession + using both star + depth players in such a way as to maximize effectiveness in this regard
* Links to helpful articles regarding SF% and it's uses:
* Dellow's original article on this topic: <http://www.mc79hockey.com/?p=6451>
* <http://www.extraskater.com/>
* <http://stats.hockeyanalysis.com/>
* <http://www.arcticicehockey.com/2013/10/23/4862840/the-importance-and-misconceptions-of-advance-hockey-analytics>