M. Schuckers & J. Curro
Faceoff postscript
© Statistical Sports Consulting 2012

Faceoffs came up last weekend at the MIT Sloan Sports Analytics Conference. On a panel about hockey analytics, I mentioned that a team had to win 100 faceoffs to get an extra goal.   I thought it worthwhile to discuss where that number came from. Jim Curro, a senior at St. Lawrence University, and I calculated the value of a play as the probability that the home team scores in 20 seconds after a play minus the probability that the away team scores in that same interval. We refer to this as the net probability of an event or NP20. For Jim's senior thesis we analyzed data from the 2009-10 and 2010-11 regular seasons. Our choice of 20 seconds was based upon an analysis where we looked at how the NP changed after each of the events in the NHL's RTSS files. The impact of an event on the cumulative NP is negligible after approximately 20 seconds.

Below is a table that summarizes the NP20 for 5v5 hockey.

Table 1: NP20 for 5v5 Faceoffs

Winner	Location (Relative to Winner)	NP20	Count
HOME	Offensive Zone	0.01669	16241
AWAY	Offensive Zone	-0.01524	14765
HOME	Neutral Zone	0.00259	20085
AWAY	Neutral Zone	-0.00358	19546
HOME	Defensive Zone	0.00049	16412
AWAY	Defensive Zone	0.00012	16010

We can see from this table that the order of magnitude for a win in each zone is roughly the same. We also note that there is a consistent home team advantage within each zone. (A win by the AWAY team yields an NP20 that is approximately the same as the win by the HOME team though with an opposite sign.)   While it is true that when the away team wins a faceoff in their own zone, the home team is more likely to score in the 20 seconds after the faceoff, this may just be noise as there were only 10 net goals that resulted from a team winning a faceoff in its own zone.

Taking a weighted average of these NP20's we get that winning a faceoff 5v5 is 0.006094. Thus, it takes 1/0.006094 = 165 faceoff wins to get a goal assuming that the distribution of those faceoffs follows the league average. If we recognize that we have a zero sum game and that winning faceoffs takes away value from your opponent then you gain one goal differential every 82 goals.

I rounded to 1 in 100 at MIT Sloan but the basic idea is there. You have to win a lot of faceoffs to get an additional goal. If Manny Malhotra takes 2000 faceoffs and wins 60%, he has gotten 400 more faceoff wins than losses and has gained his team about 5 goals or just less than 1 wins per year. (Note that 3 goals = 1pt, so 6 goals = 1 win.) This is an extreme example since Malhotra is one of the few players to the league capable of winning at this rate.

Jim Curro's thesis work is an extension of work done by previous St. Lawrence students Matt Generous and Dennis Lock.