

CA Study rev1b

OBJECTIVE

Discover some things about CA, how it work and how I can made a good lineup. There will be also some useful consideration about match engine in general.

IMPORTANT THINGS TO KNOW

• COMPARES

You might read quite often in this doc about percentage compares between departments (defence vs attack etc.), so I'll explain how this function work.

First of all you should convert the words in numbers, so disastrous very low will be the number 1, disastrous low 2 etc.

Then the function will be: $\frac{ValA^X}{ValA^X + ValB^Y}$

Exponent will change and dependes on which compare you did, for example 3 for midfielder compare and 3,6 for attack Vs defence compare.

So you should have a percentage that change between 0 up to 100% when ValA become very hight compared to ValB.

We already know for sure that hattrick use this function, with exponent=1, to calculate ball possession.

• FILTERS

In order to have better graphs and be sure to abstract only the correct thing to analyze we made some filters.

For example if in the attack graph we notice that both attack rating and CA ability raise we should exclude some matches and consider only matches with ability between excellent to formidable in order to exclude this noise. That's the main reason 'cause we had to have a very wide database.

You'll see also some other graphs near the main one, those show the average values of the other factor, if in those graphs don't change the values that means that the main graph are better.

• FUNCTIONS

We have to say that the functions that you'll read here are not the real functions that match engine use, but we think (or hope) that it's a great estimation.

DESCRIPTION

The amount of data in database is of more than 26000 matches.

We have not considered special events because we can't know the skills of single player.

So, how born and how work a counter attack?

That's clear:

- The opponent fail a chance
- The Ca ability give the possibility to have a CA from it
- Attack vs defense decide if it'll be goal or a missed Ca

We must say also that all ca chances are reported in match report.

This means also that we can made a great estimation about realization function that we can also suppose to be the same for CA and normal chance.

• MORE THAN 10 CHANCES BY?

There are many matches where the number of chance added to CA result in more than 10, this doesn't mean that there can be more than 10 normal chance in a match, but only that a CA can born from a missed chance reported in match report.

We can also say that a Ca doesn't born every time the next minute after the missed chance, but also many minutes after, anyway ever before the next event.

There are no relation between the side of missed chance compared to the side of CA.

• MORE CHANCES IN THE BETTER SIDE?

We can say that the 10 chances are distributed on the 3 sides (and the 4th as set pieces) with a fixed probability that doesn't change compared to the strong of the attack.

The probability is 52% left or right, 38% center and 10% set pieces (Note, this season, june 2008, the chance on set pieces will raise).

1. FACTOR TO TAKE IN CONSIDERATION WHEN A CA WILL BE CREATED

Short description:

- Ball possession: obviously to take in consideration, but not the ball possession, better the comparison between midfield rating.
- Defence: to consider when a CA is created, but really importan when we have to stop an opponent chance.

- Ability vs Htstats: the main thing to consider after the stop of the opponent chance.
- Attack: important only to realize the CA, really minor for the creation (considered in HTstats sum).

• BALL POSSESSION

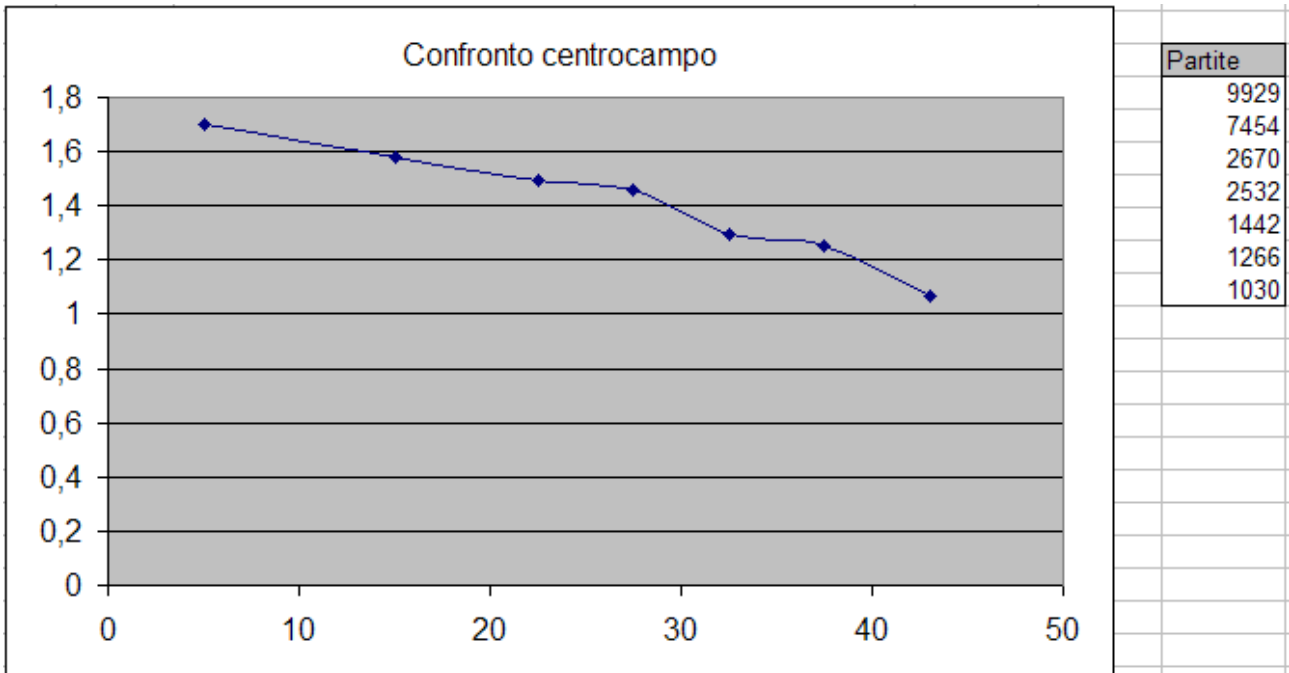
Better to say, probability to have a normal chance.

Obviously more chances for opponent means more possibility to have a CA from them.

Graph confirm this deduction, the difference is only about 0,5 CAs, but probably it's because the maximum number of CA is limited to 3 (4 in few cases) while the number of chances of our opponent is in almost all cases more than 5.

The function represented in this graph is

$$\frac{CCA^3}{CCA^3 + CCB^3}$$



Filters:

No filters needed here:

Def vs attack stable on 66%

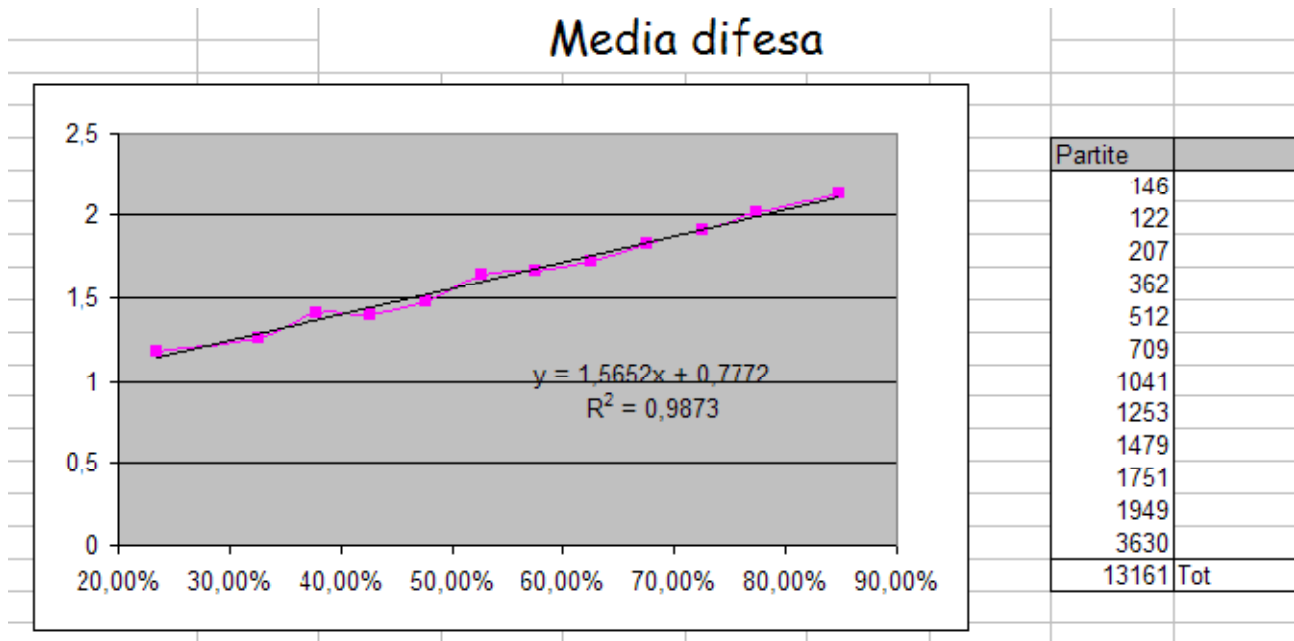
Ability vs HTstats stable on 55%

Xass: the function explained before

Yass: Average CAs

• DEFENSE

The variable that come in the first step, when we have to stop opponent chance.
We have to take in consideration that when your defence is too weak all CA are useless, since opponent team will ever score too many goals.



Filters

Abilità vs htstats: 55-65

Abilità vs htstats compreso tra 58 e 60%

Confronto CC compreso tra 13 e 16%

Ascisse: confronto difesamia/attaccoavv

Ordinate: media contropiede

• ABILITY

Let me say that it's not the ability to take in consideration, but the ability compared to something other, rules says "the level of match", after some tries we come to the decision to consider **ability vs Htstats of both, opponent and CA team, without midfield rating.**

The function is:

La formula per ottenere il confronto è:

$$\frac{Ability^{1,2}}{Ability^{1,2} + Htstats/24}$$

Have a look also to the follow graph, interesting.

In the Xas you can find the interval of compare, also separated for how many CA will be, from 0 to 3.

The bars show the percentage of matches in the single interval where were verified 0, 1, 2 or 3 CAs, obviously the sum is 100%.

You can notice that the percentage of matches with 0 CAs decrease on raise of value of compare, viceversa which with 3 CAs, while the one with 1 or 2 CAs first raise and then decrease where the number of CAs will raise.

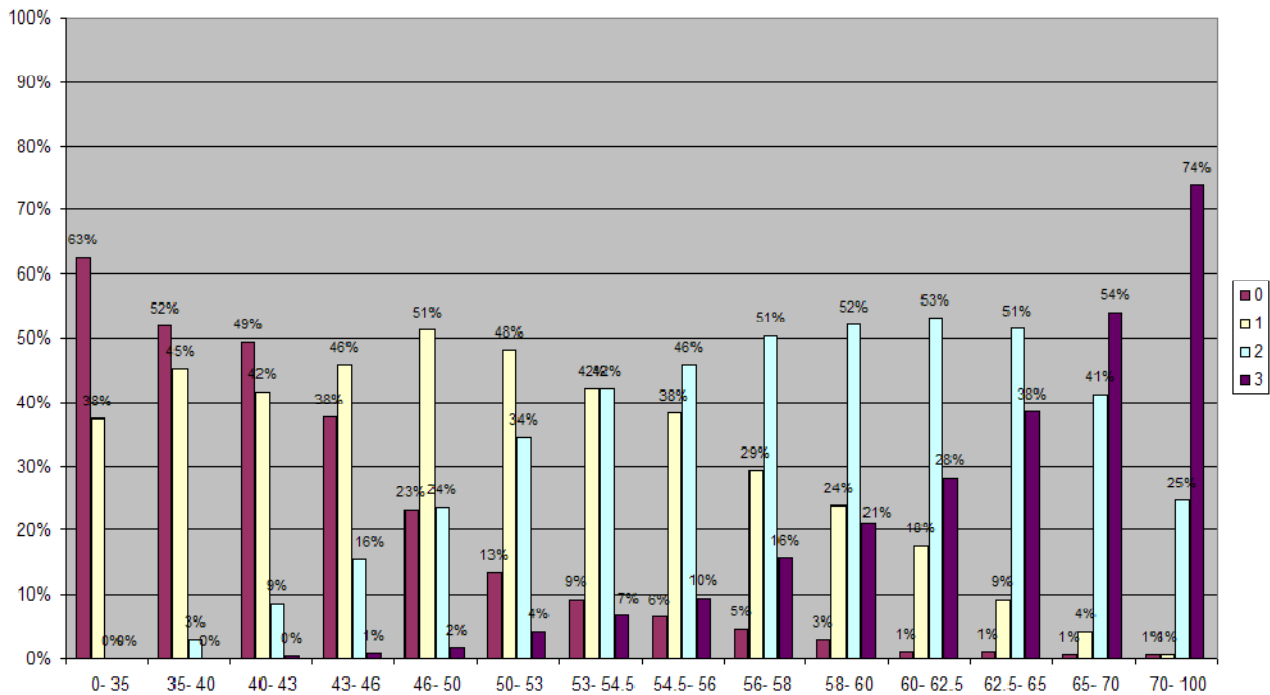
So, if you'll know the ability that you'll do in CA and the value of Htstats your and of your opponent you can look at graph and have an idea about the number of CA that you will have.

DEFENCE >60% <90%

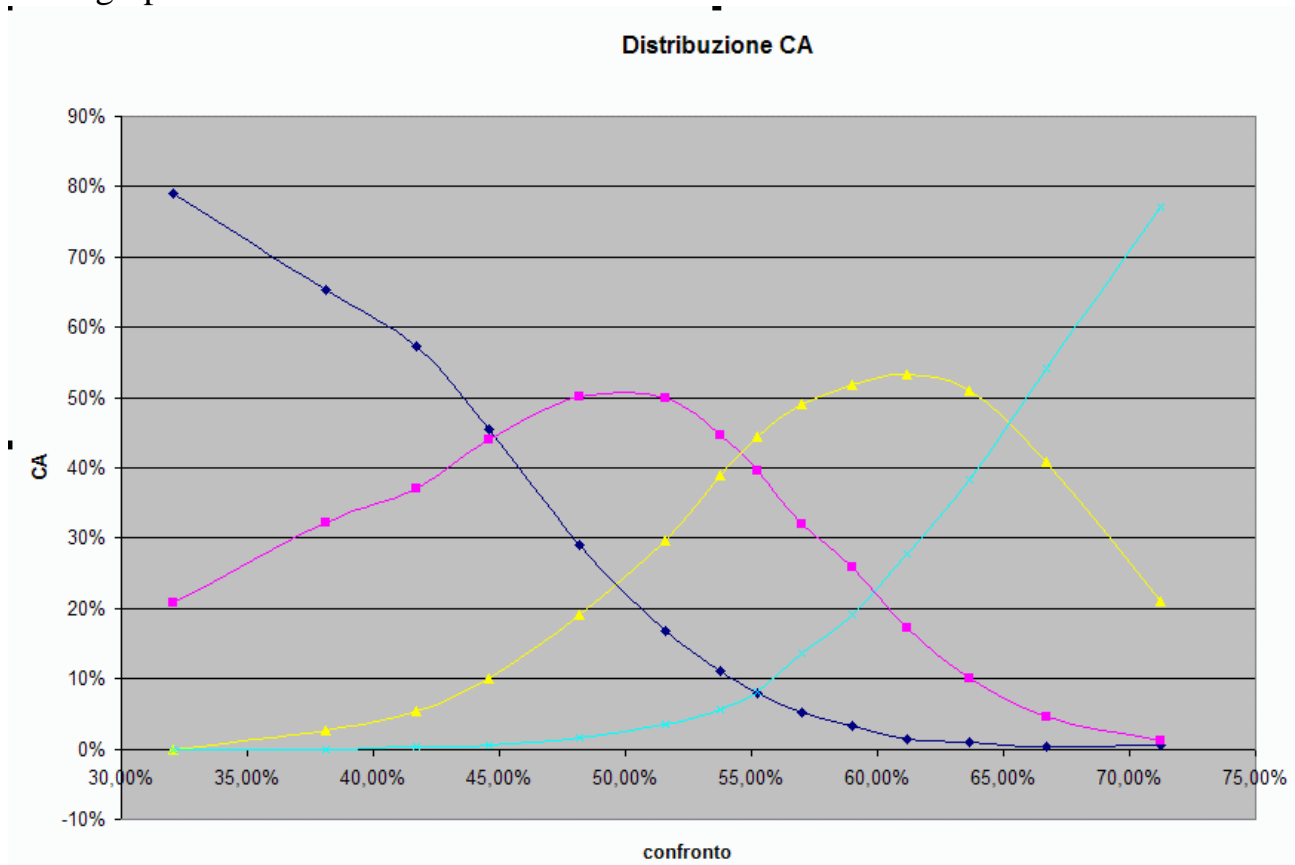
Difesa tra 70 e 80%, Confronto CC tra 14 e 16%

Qualche imprecisione nei primi 2 intervalli per scarsità di dati

Abilità / HtstatsAvv



Same graph with lines instead bars:



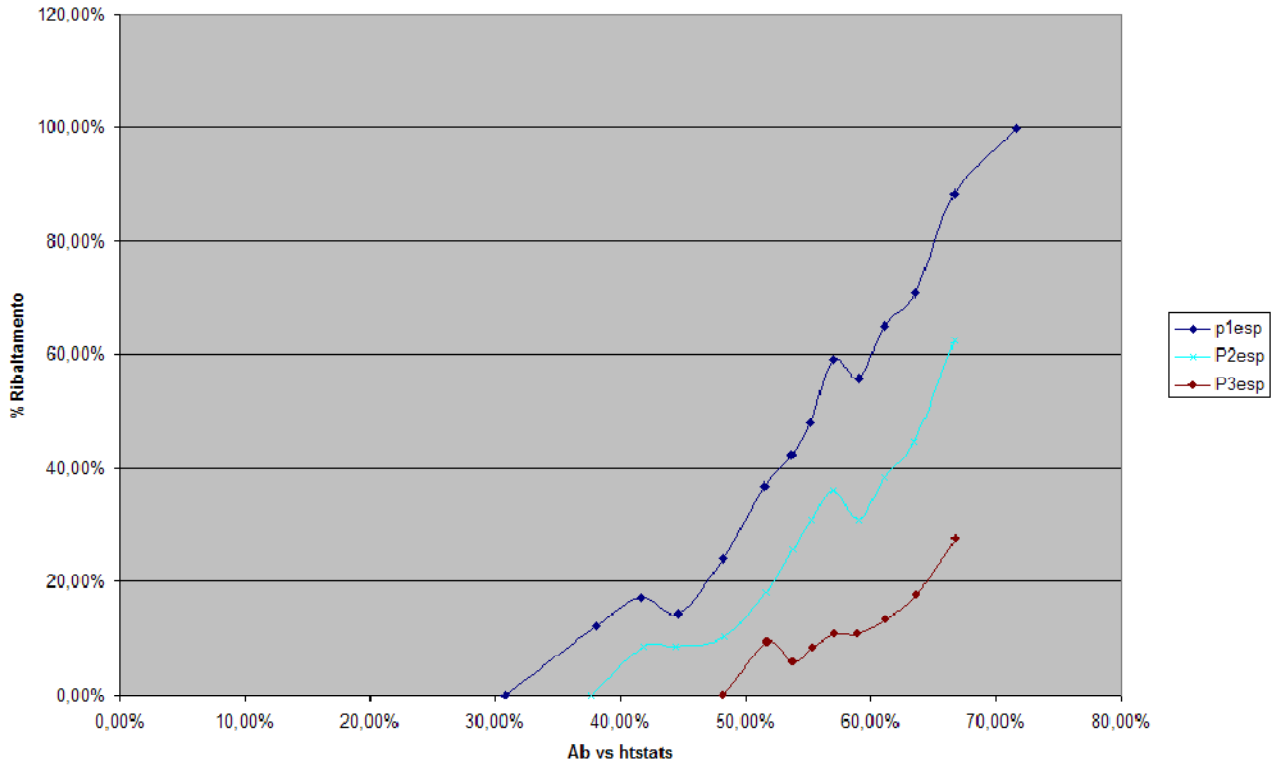
As we said before the total number of CAs created depends also to the ball possession and compare between opponent attack and our defense, those factor will make an important change on our graph.

For that reason we decided to search the real function that decide how a CA will be created (thanks for the help to purple50141).

And an interesting thing come from this research, you should know that the probability to have a CA change during a match and depends on how many CA you already had in the minutes before.

Let me made an example, you have a 60% probability to have a Ca from a missed chance at the begin of a match, well, if you really made a CA then the probability to have a CA in the follow chances will decrease, for example to 30% and so on, if you'll have another CA the probability decrease to 15%. Obviously after the 3rd CA the probability come to almost 0.

So after some work and theoretical consideration (like 10 chances in total and 5chances each half time) we calculated the values of p1, p2 and p3:



Not really a linear graph yes, but it's because the high number of noises and that htstats value is not the real factor considered by match engine.

2. SOME OTHER THINGS TO CONSIDER WHEN PREPARE A MATCH

Note from now on I'll cut some part from original Italian version *

For every tactics, but more for CA, it's not enough to have a perfect level of tactic, but we should think about the final result.

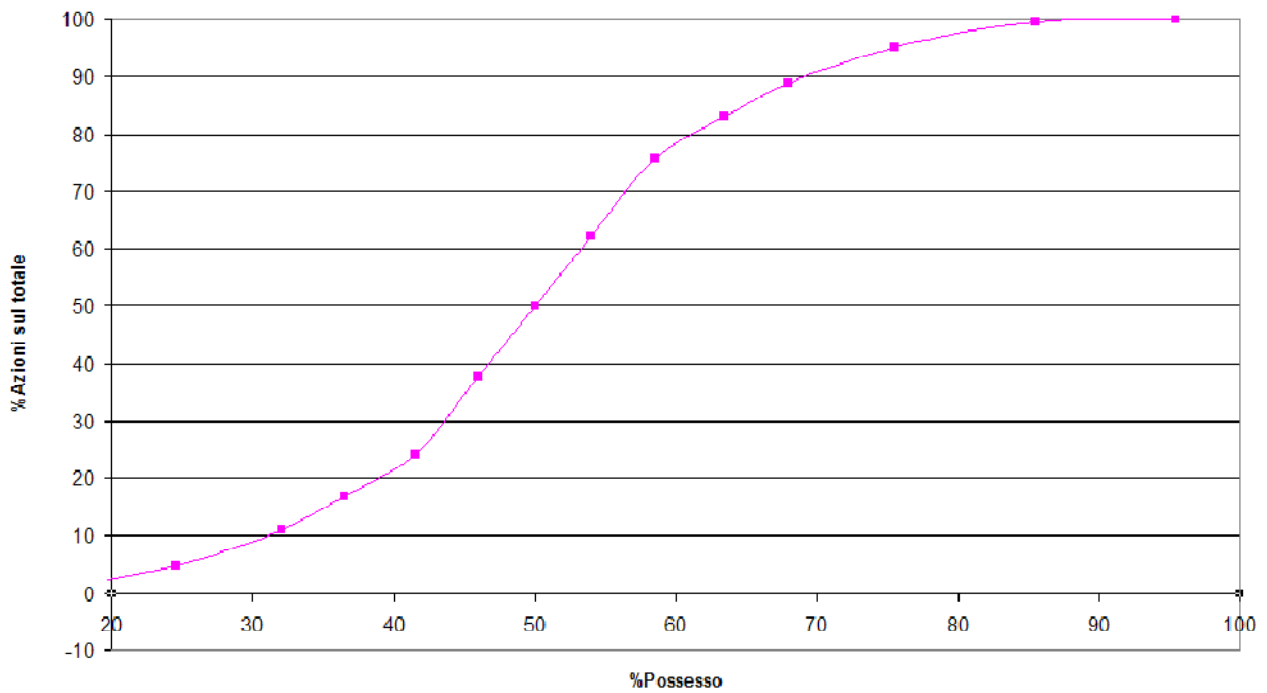
We can have 3 CAs, but if opponent score 4 goals our CA are useless.

- CHANCE ASSIGNMENT

First of all, how chance are distributed in a match?

In the next graph you can see how ball possession are related to the number of effective chance assigned:

Distribuzione delle azioni rispetto al possesso

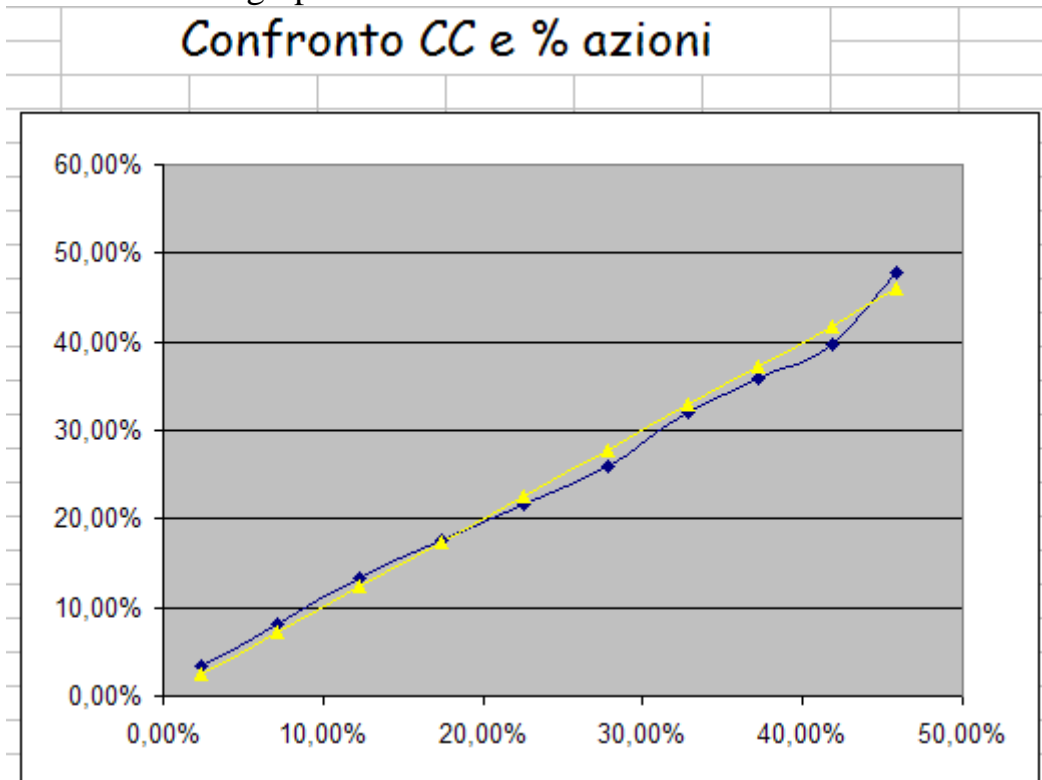


As you can see the function are not linear, so we have to find how the midfield rating are compared.

This is a great function to have the probability to have a chance on your side:

$$\frac{CCA^3}{CCA^3 + CCB^3}$$

And here a new graph with this function:



Filtri:

Difesa Vs Attacco >20%

Attacco contropiedista Vs Difesa Avversario >20%

Azioni >7

Risultati:

Realizzazione stabile a 40% sia per contropiedista che per avversario

In giallo la retta $Y=X$

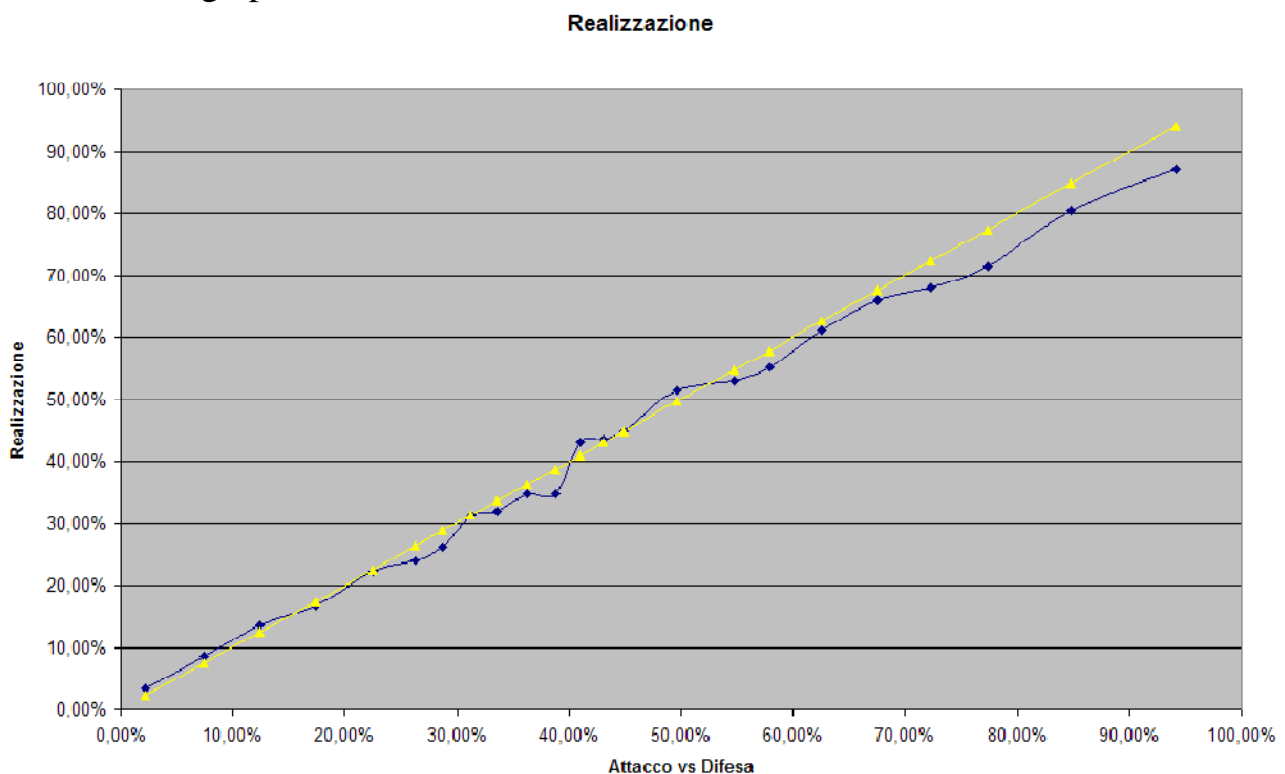
So if you have 60% of ball possession it means that you have almost 80% of probability to have each chance (note, this doesn't mean that you have 8 chance every time, it's only a probability).

-REALIZATION

This is the final function of realization that we had calculated in the study on 2006:

$$\frac{Att^{3,6}}{Dif^{3,6} + Att^{3,6}}$$

And here the graph



We can notice that the graph is not linear and that's cause of the invisible influence of self confidence.

-SET PIECES

There isn't CA that come on a penalty, I don't know why, but it is.

By the chance to score on set piece is more than a normal set piece, and equal to the sum of set piece+penalty of a normal chance.

Note, all other parts are cut

October 2006 (but still actual on june 2008 :P)
HomerJay &