

The Simple Proof of Why Tiger is more Dominant than Roger

A. Benjamin Winger, Ph. D

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"I think one day he is going to break every record there is to break." Pete Sampras, winner of the most tennis grand slams at 14, about Roger Federer, who has 11.

"I wouldn't be surprised if the kid won 10 green jackets one day." Jack Nicklaus, winner of the most golf grand slams, 18, about a young Tiger Woods, who has 13 majors (4 green jackets).

1 Introduction

In this article, we set to resolve the issue of who is more dominant, Tiger Woods or Roger Federer. The article is broken up into 3 sections. In section 2, we will come up with a universal quantifiable definition of "dominant" regardless of sport. Then we will show that Woods's dominant number is higher than Federer's. Then we will conclude.

2 What does it mean to be dominant?

Every sports competition has a number of competitors. Every sports competitor has opponents. The relationship between the ratio of victories to attempts and the number of competitors determines a dominance factor:

Notation: Given Athlete A ,

1. Let O be the number of opponents that A needs to defeat in order to win a competition in that particular sport.
2. Let V be the number of victories by A .
3. Let C be the total number of competitions A entered.

Finally, let W_A represent the winning percentage of A , in other words,

$$W_A = \frac{V}{C}$$

Definition: The *Dominance Factor* for A , denoted by D_A , is

$$D_A = (W_A)^{\frac{1}{\sigma}}$$

2.1 Example:

Suppose athlete A wins 70 percent of her competitions when facing three opponents in order to win. The Dominance Factor of this athlete is a measure of how often she beats her competitors on average. Let's label how often she beats her opponents as x . If A faces her opponents independently, then the chance of her beating them consecutively is x^3 . But since we know that she wins 70 percent of her contests on average, then we know that she beats three of her opponents consecutively 70 percent of the time. This means that x should solve

$$x^3 = .70$$

or

$$x = .70^{\frac{1}{3}} \approx .8879$$

This means that player A defeats her opponents roughly 89 percent of the time on average. That is her Dominance Factor.

Remarks:

1. It is important to note that the calculation of the dominance factor is independent of sport.
2. We can view Tiger Woods facing his competition individually as independent events given that he has to beat every single person's score to win and he has no direct calculable effect on his opponents' score.

Definition: Player A is *more dominant* than player B if and only if

$$D_A > D_B$$

3 Tiger Woods is More Dominant than Roger Federer

To make the point clearer, we will take Roger Federer's most successful years (2004-2006) and compare its dominance to Tiger Woods' success over his *entire ten year career*.

- Let D_T be Tiger Woods' Dominance Factor and let D_R be Roger Federer's Dominance Factor.

- From 2004-2006, Roger Federer won 70.8 (34/48) percent of the tournaments he played defeating at most 6 opponents each time (sometimes he gets a bye). (Source: www.atptennis.com)
- From 1996-2006 Tiger Woods has won 26 percent (52/200) of the stroke play tournaments he has played defeating an average at least 100 players each time (full fields have 140, exclusive fields (like World Golf Championships Events have 70). (Source: www.pgatour.com)

Thus, $D_T = (.26)^{\frac{1}{100}} \approx .9866$ and $D_F = (.708)^{\frac{1}{6}} \approx .9441$.

4 Conclusions

We have mathematically formalized what seems to be apparent. Tiger Woods is more dominant because he faces many more people in competition and his win rate is high enough to eclipse Roger Federer who wins much more (as a percentage) but faces less people. In future articles, we will use this formula to simply find who is the most dominant athlete in *any* sport over a particular time period.