

Analyzing the Effect of Surface in Tennis Grand Slams

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Abstract

Tennis grand slams consist of the Australian Open, French Open, Wimbledon, and US Open, which are played on hard (Plexicushion), clay, grass, and hard (DecoTurf) courts, respectively. The surface type may substantially impact ball speed, height, and spin as well as player speed and agility. It is also believed that play style and practice habits may contribute to different results across surface types. For example, Rafael Nadal is thought to be the best clay court player of all time whereas Roger Federer is particularly known for dominance at Wimbledon. On the women's side, Serena Williams once struggled on clay courts but has seemingly transformed her style to perform better on clay courts, but has perhaps suffered on grass as a consequence. In this analysis, we examine the result of the top 100 players in grand slams from 2013-2017 across the four different surfaces. We create a hierarchical model with fixed and random effects to predict the number of points won in a match. We take into consideration player-specific effects, nationality (which is thought to have an effect on play style), sex, ranking, ELO, and game statistics. We assess the fit of our model using standard statistical techniques (e.g. MSE, AIC, BIC, residual diagnostics) in addition to 'common knowledge' factors (for instance, Rafael Nadal should be indicated as a superior clay court player by the model). We compare the results of top 100 players across grand slams to examine the effect of court surface. We also provide an in-depth analysis of Nadal, Federer, and S. Williams.

Introduction

Example reference(Centers for Disease Control and Prevention 2018)

Data

Methods

Results

Discussion

References

Centers for Disease Control and Prevention. 2018. "Measles History." Available online at <https://www.cdc.gov/measles/about>.