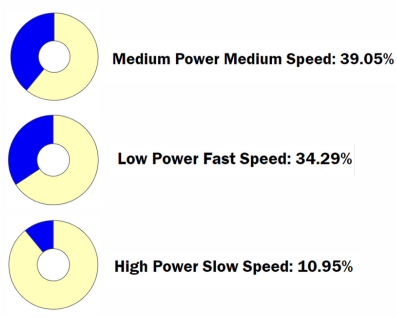
Tennis Racquets!

The SPEED POWER Tradeoff

Finding the perfect racquet is every tennis player's dream. But depending on whether you're powerful Pam or speedy Sam, finding the racquet to compliment your play style, can be challenging.

*Visualizing a data sample of tennis racquets available in the market led to the insight that **tennis racquets typically come with a speed-power tradeoff.** More than 80% of racquets in the data set could either deliver medium power and medium speed, higher power at the cost of lower speed, or higher speed at the cost of lower power.*

Power	Speed	%	
Med	Med	39.05	
Low	Fast	34.29	84
High	Slow	10.95	
Med	Fast	9.05	
Low	Med	2.38	
High	Med	2.38	
Med	Slow	1.43	16
High	Fast	0.48	
Low	Slow	0.00	

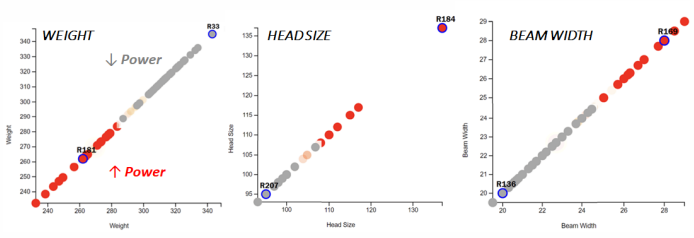


Rule of Thumb

*The performance of a racquet may be attributed to various factors (apart from the prowess of the player of course ;) such as the length of the racquet, its string pattern, and so on. Here, however, **weight**, **beam width, head size** and racquet **balance** were found to be important factors such that **weight > beam width > head size > balance** in terms of influence on power/speed.*

Power

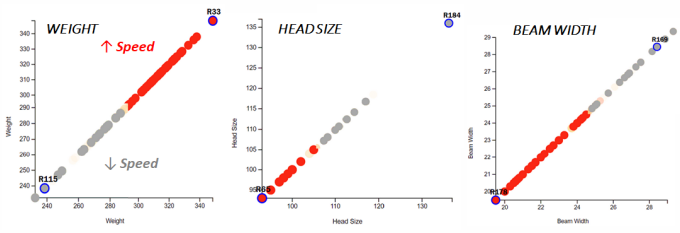
*From scatter plots, it was determined that **weight** had a **positive correlation** with power while **head size** and **beam width** had a negative correlation.*



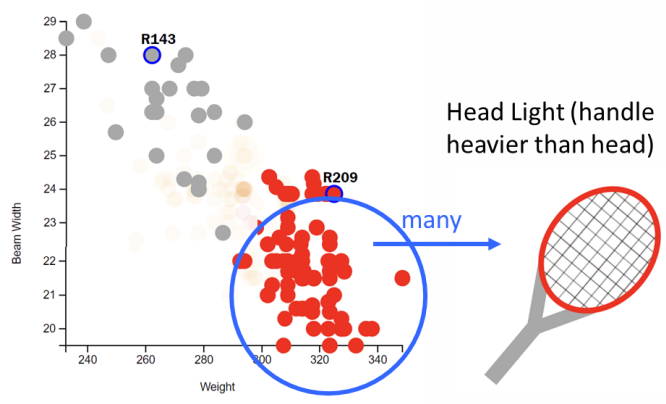
Upon further investigation, it was observed that many high-power racquets have head heavy balance while low power ones are head light.

Speed

*Contrary to with power, with speed, **weight** had a **negative correlation** while **head size** and **beam width** had a positive correlation.*



Similarly, it was observed that many high-speed racquets are head light while low speed ones are head heavy.

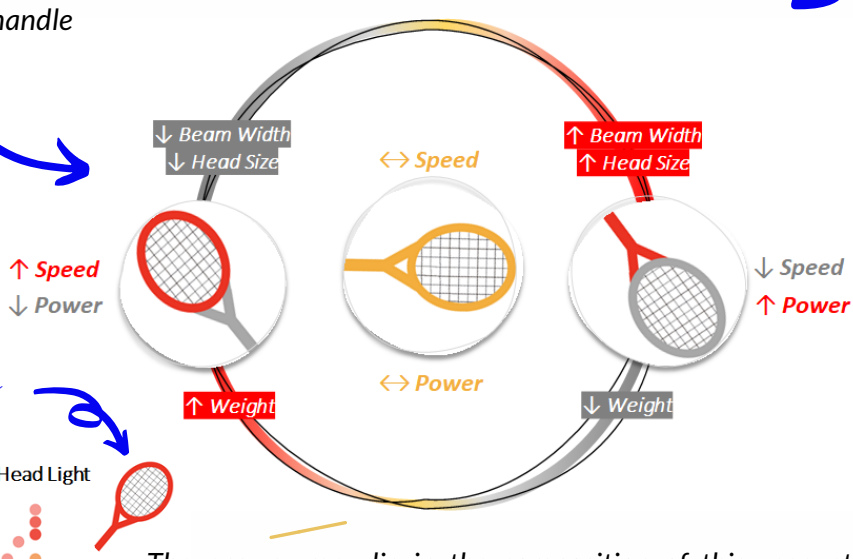


↑ Weight + ↓ Head Size + ↓ Beam Width + Head Light = ↑ Speed
↓ Weight + ↑ Head Size + ↑ Beam Width + Head Heavy = ↑ Power

Thus, data has revealed a general rule of thumb to use when going racquet shopping.

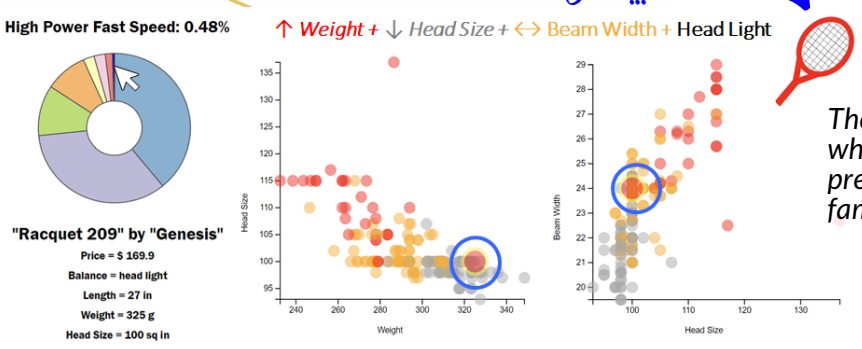
Let head of the racquet represent speed and its handle represent power.

- *High Speed/Power = Red*
- *Medium Speed/Power = Orange*
- *Low Speed/Power = Grey*



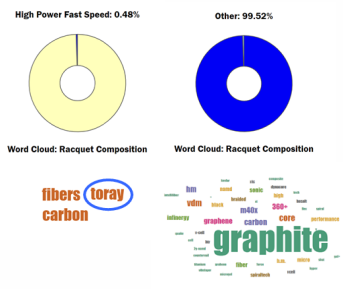
CAN THERE BE A PERFECT RACQUET?

There was One...



This racquet seems to be built for Speed. So, how does it still pack high Power?

The answer may lie in the composition of this racquet which as opposed to other racquets was made with premium quality carbon fiber from the company "Toray", famous as the 4th best carbon fiber manufacturer in USA.

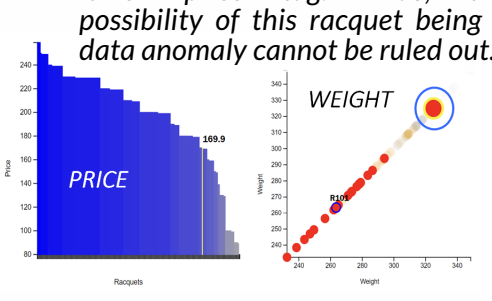


AWESOME!

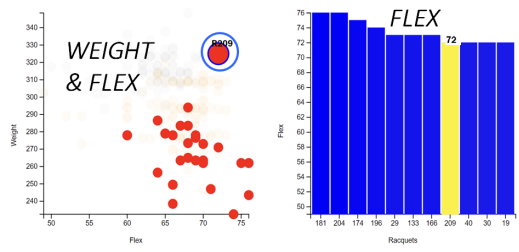
This racquet has an unusually high weight considering its power. Also, despite being made using high quality material, it still boasts a lower price tag. Thus, the possibility of this racquet being a data anomaly cannot be ruled out.

OR ANOMALY?

"Toray" carbon fiber is famous for its high tensile strength meaning that the racquet can be stretched more without damage. "Genesis" seems to have leveraged this property and has made the racquet very flexible compared to others with similar specifications which may have helped boost power.



Although some ↓power racquets also had high flex values, it is to be noted that all ↑ Power racquets had Higher Flex Values and this racquet has amongst the highest flex values.



That said, the data shows that lots of fast/powerful racquets are available across different price ranges. It may also be that the manufacturer of this racquet has opted to reduce other parameters (this racquet has amongst lowest lengths) to be able to provide the racquet at a lower price.

Nevertheless, the topic of whether tennis racquets can be made to provide both high power and speed at a reasonable price is one worth further investigation!