

# Analysis of Trackman data gathered at World Long Drive events

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## I Introduction and Summary

This report presents analysis of three days' worth of Trackman data gathered at two World Long Drive competitions; the final day of the Tennessee Big Shots benefiting Niswonger Children's Hospital and the final two days of the World Long Drive Championship in 2019. In total 435 valid drives were measured; 304 by men and 131 by women. This data is compared against average launch data for the PGA Tour and the LPGA Tour.

Since the competitors in long drive competitions have presumably optimized their swing mechanics and physical build to increase driving distance, we can view these competitions as the best indication of the potential upper limit to driving distance derived from current equipment technology.

Table I gives a summary of mean values measured during these long drive events. These are calculated Trackman values rather than measured drives.

**Table I: Average Trackman values recorded during the three days.**

	<b>Club Speed (mph)</b>	<b>Ball Speed (mph)</b>	<b>Smash Factor</b>	<b>Launch Angle (deg)</b>	<b>Spin (rpm)</b>	<b>Carry (yards)</b>
<b>Men</b>	145	214	1.48	11.2	2789	352
<b>Women</b>	116	171	1.47	13.4	2813	282

## 2 Analysis

### 2.1 Carry

Table I presents a summary of the carry distances, and Figure I shows a histogram of the carry distances.

**Table 2: Summary of carry distances hit by men and women during the events.**

	<b>Drives Measured</b>	<b>Mean (yards)</b>	<b>Median (yards)</b>	<b>10th Percentile</b>	<b>25th Percentile</b>	<b>75th Percentile</b>	<b>90th Percentile</b>	<b>Longest Drive</b>
<b>Men</b>	304	352	361	303	341	376	385	405
<b>Women</b>	131	282	295	251	276	305	312	331

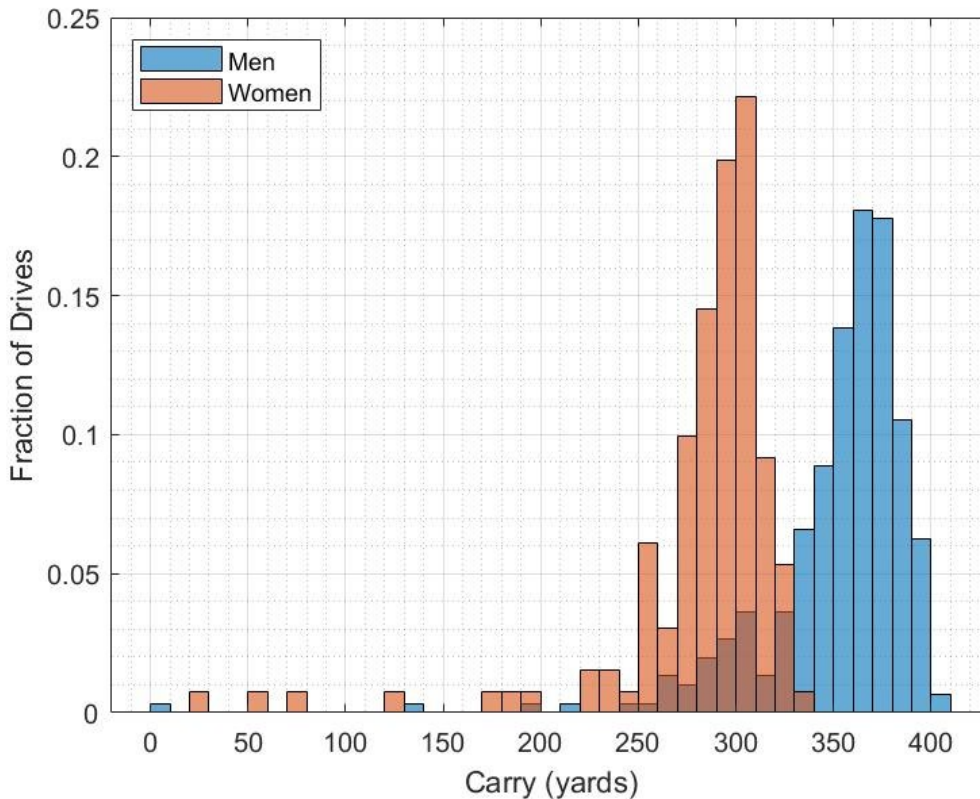


Figure 1: Carry distances measured during the events.

From Table 3, we can see that the difference in carry distance for men between the long drive competitors and the PGA Tour is 77 yards, whilst for women the difference in carry between the long drive competitors and the LPGA Tour is 64 yards.

Whereas the mean carry distance hit by men is 70 yards longer than that for women in the long drive competition, the PGA Tour average carry distance is 57 yards longer than the LPGA Tour.

## 2.2 Clubhead Speed, Ball Speed and Smash Factor

As would be expected, there is a commensurate increase in clubhead speed and ball speed when the carry distance increases. The clubhead speed measured in the long drive competition was 145 mph, 32 mph faster than the value measured on the PGA Tour. Given that the difference in carry distance between the long drive competition and LPGA Tour is lower than for men, it is unsurprising that there is less of a difference in clubhead speed for women, 22 mph.

The smash factor for men in the long drive competitions is 1.48, which is the same as that on the PGA Tour, and 1.47 for women, which is close to the 1.48 value measured on the LPGA Tour. Given the consistency in these values, we know the relationship between ball speed in the long drive competitions and the Tours for men and women will be similar to that for clubhead speed.

### 2.3 Launch Angle and Spin

For both men and women, the launch angle in the long drive competitions are higher than the values measured on their respective tours. For men, the launch angle of 11.2° in the long drive competition is 0.3° higher than the average value on the PGA Tour, whilst for women the launch angle of 13.4° in the long drive competition is 0.2° larger than that measured on the LPGA Tour. In general, the launch angles for women are higher than those for men. In the long drive competition, the launch angle for men is 2.2° lower than that for women, whilst the launch angle is 2.3° lower for men on the PGA Tour than women on the LPGA Tour.

Although the spin values measured are higher in the long drive competition for men and women than their respective tours, the variability associated with the spin measurements means we have to be wary of making definitive conclusions about any differences in spin.

### 3 PGA Tour and LPGA Tour Trackman Values

We can use the average launch conditions for the PGA TOUR given below in Table 3 to simulate how far the ball used in the long drive competitions, the Volvik VIVID XT, would travel at such launch conditions. The results are presented in Table 4. For clarity, the white version of the ball was used in this analysis.

**Table 3: Average Trackman values recorded on the PGA and LPGA Tour.**

	Club Speed (mph)	Ball Speed (mph)	Smash Factor	Launch Angle (deg)	Spin (rpm)	Carry (yards)
<b>PGA Tour</b>	113	167	1.48	10.9	2686	275
<b>LPGA Tour</b>	94	140	1.48	13.2	2611	218

**Table 4: Carry and total values calculated in 'long' orientation.**

Submission Year	PGA TOUR Average Launch Conditions		LPGA Tour Average Launch Conditions	
	Carry	Total	Carry	Total
<b>2018</b>	272	291	223	244
<b>2019</b>	272	291	223	244

The values calculated for the 2018 and 2019 submissions are the same, as would be expected. We can see that the carry value calculated for the PGA TOUR in 2019 is 80 yards shorter than the mean carry calculated at the long drive championship, and the value for the LPGA Tour is 79 yards shorter than the mean value calculated in the women's competition.

## 4 Appendix A: Historic Winning Drives

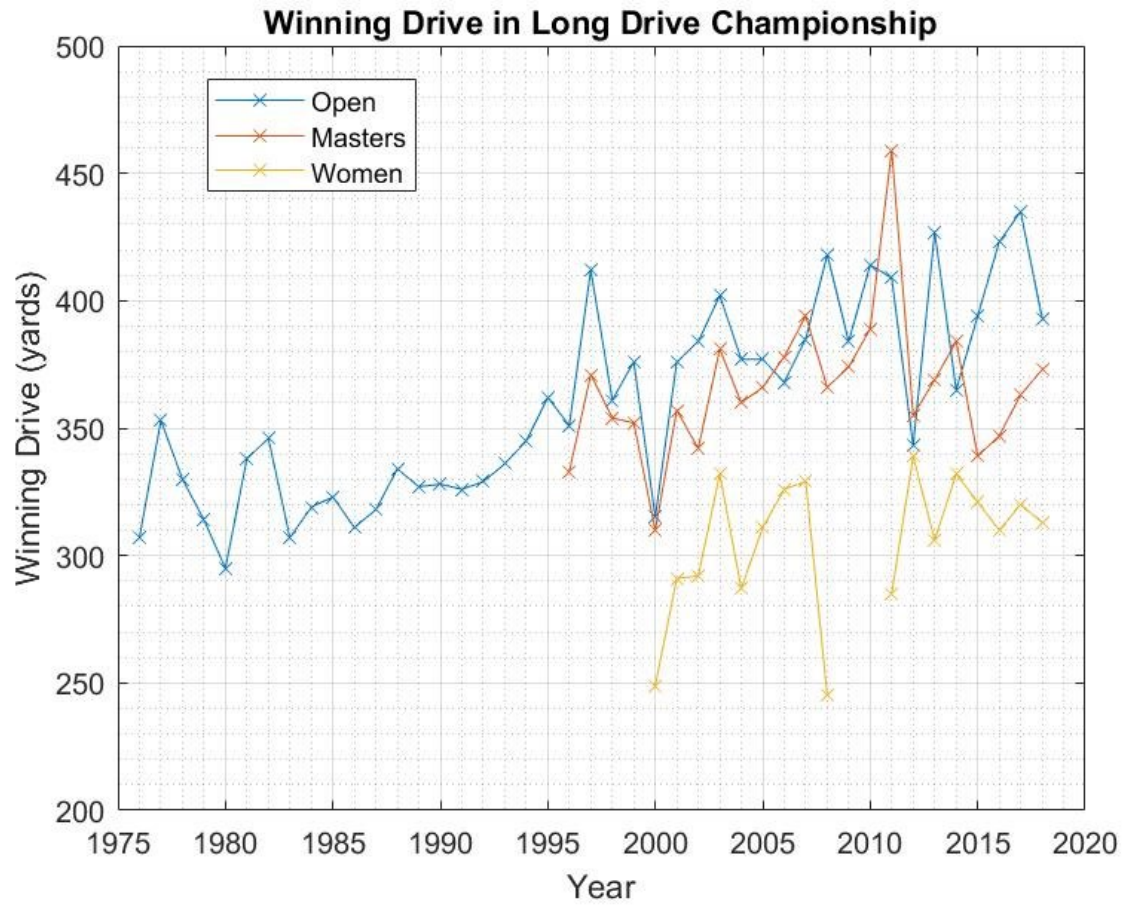


Figure 2: Winning long drive by category and year.