

# How Likely Could Scoring 18-under Par Be?

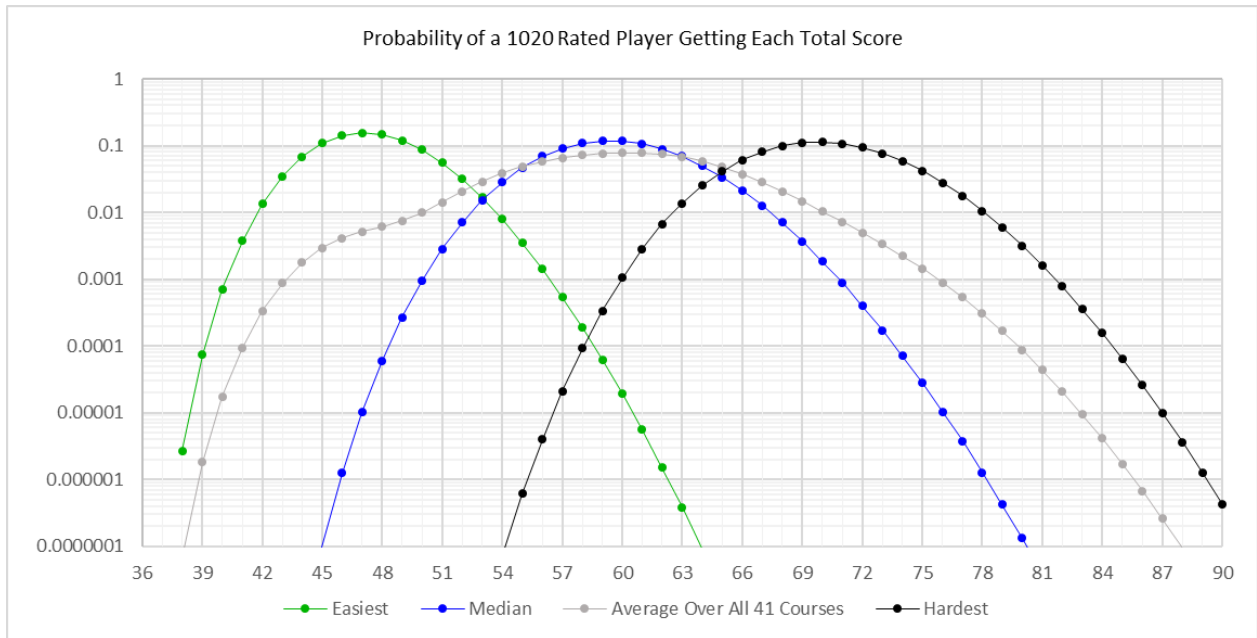
By Steve West Disc Golf, LLC

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To explore how likely a score of 18-under par could be, we need to look at courses where the highest rated players have played. Unfortunately, there aren't many of the highest rated players. I chose to look at players rated around 1020. There are enough of these to get a good-sized sample. I found 40 courses where a significant number of players rated around 1020 played in 2023.

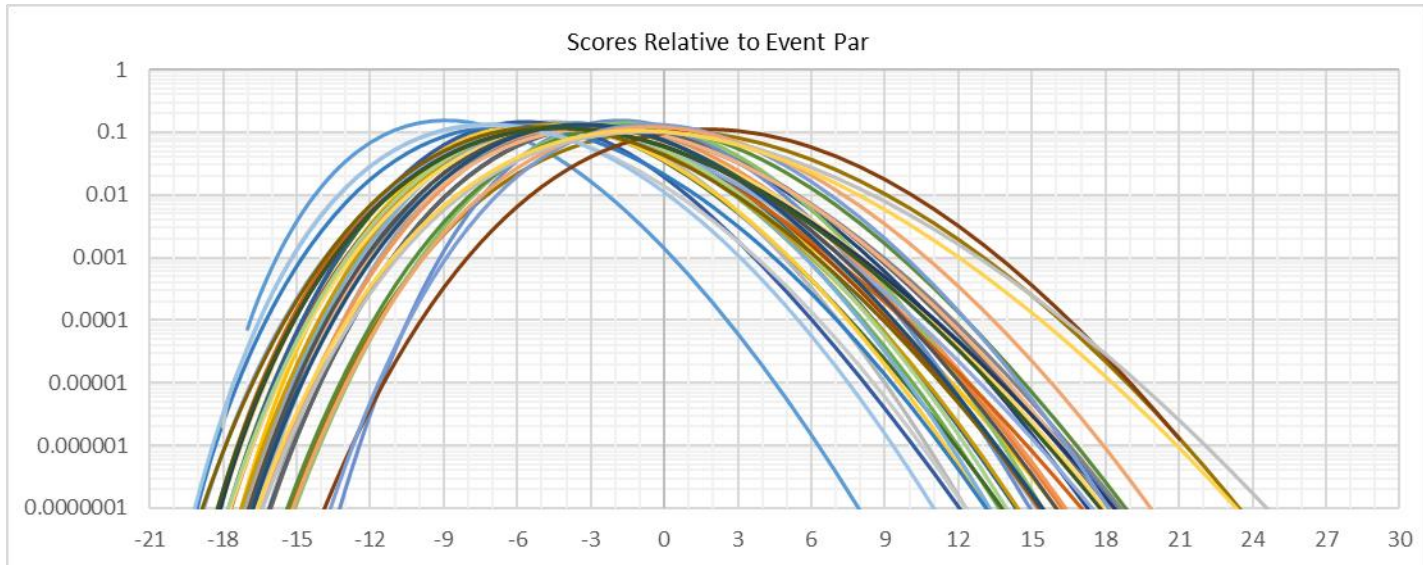
To get a general lay of the land, the following graph shows the probability density functions of the total scores for three sample course and the average across all courses.

Note that the probability scale is logarithmic so we can examine unlikely occurrences. On a logarithmic scale a bell curve looks like a parabola. For perspective, across all courses (gray dots) a 1020-rated player is about ten times more likely to get a 60 as either a 49 or a 71.



The differences between the scores of the courses is interesting, but not really relevant to the question. What determines the probability of a score of 18-under is the relationship of scores to par.

The next chart shows the distributions of the difference between total scores and total event pars. Each course has its own line, and all courses are shown.



Digression: The spread of the most common score relative to par, and the range of the probability of scoring even-par, both show that there is some inconsistency in how pars are set.

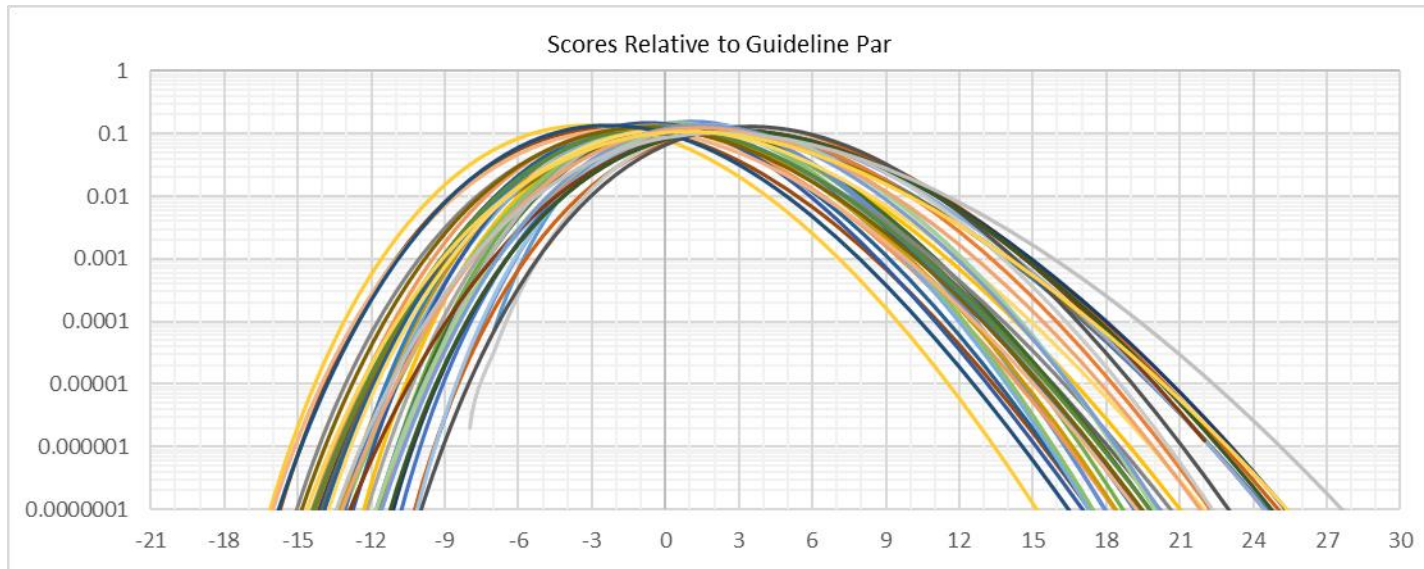
Despite event par having been set too high for many courses, the best chance at 18-under is still lower than 1 in 300,000.

A question that arises is how frequent a score of 18-under *could* be, using the holes and pars from these courses.

The all-star course with the highest chance of an 18-under consists of 18 hand-picked holes for which event par was higher than the guidelines. 10 were par 2s labeled as par 3s, and 8 were par 3s labeled as par 4. In other words, a score of 18-under **event par** on these holes would be an even-par round with **guideline pars**. It's like giving a scratch golfer a fake handicap of 18.

A 1020-rated player would have an average score of 49 on this "par 62" course. Even with this extreme corruption of par, a 1020-rated player would only get a score of 18-under (or better) once out of every 74 rounds.

The next chart shows the distributions of the difference between total scores and total guideline pars.



Digression: the narrower spread of the most-common scores relative to par, and the tighter range of the probability of scoring even-par demonstrates more course-to-course consistency when pars are set according to the guidelines.

With guideline par, there is no (or an unmeasurably low) chance of getting 18-under on any of these courses.

The next question is whether there *could be* a course where a legitimate 18-under is achievable. As a test, I put together 18 holes with the highest birdie percentages (relative to guideline pars) and computed the chance of 18-under on this artificial course.

The all-star course with the highest legit chance of 18-under consists of holes which are all just barely difficult enough to be legit par 3s (nearly par 2). The average score of 1020-rated players would be 45. The 1020-rated players would be getting about 56% birdies on every hole, but the chance of scoring 18-under is still low; just one in 24,000.

The all-star course which has the highest chance of 18-under for a legit par of 62 consists of 10 of the lowest-scoring par 3s, and 8 of the lowest-scoring par 4s. The par 3s each offer about 56% birdies, and the par 4s offer about 44% birdies. The chance of an 18-under for a 1020-rated player on this course would be 1 in 150,000.

There were 5,727 rounds by players rated near 1020 in the data. If all 40 courses they played were set to be as birdie-rich as possible, without departing from the par guidelines, while having a reasonably respectable par of 62, we could expect to see an 18-under round by a 1020-rated player once every 26 years.

The next area to explore is how to adjust these results to reflect the presence of even higher rated players. While there is not enough data to do that, it is thought that the results will not change much.

One reason is that there aren't many players rated higher than the players who were included in the 1020 results; which were mostly based on players rated from roughly 1010 to 1030. The top 197 players in the world have an average rating of 1020. Yet, there are only 27 players with a rating above 1030. Mixing in the highest rated players would create about 14% more opportunities.

Obviously, the highest rated players will have a greater-than-14% impact on the number of birdies. However, not by that much because:

- When the number of birdies is already high, there are fewer non-birdie scores to "convert" to birdies.
- If the 1020-rated players are already getting a score of 2, there is no real way for 1050-rated players to do better. Aces are just too rare to matter.
- Birdie-rich courses generally have lower scoring holes and the change in average score by player rating is smaller for holes with lower scores.

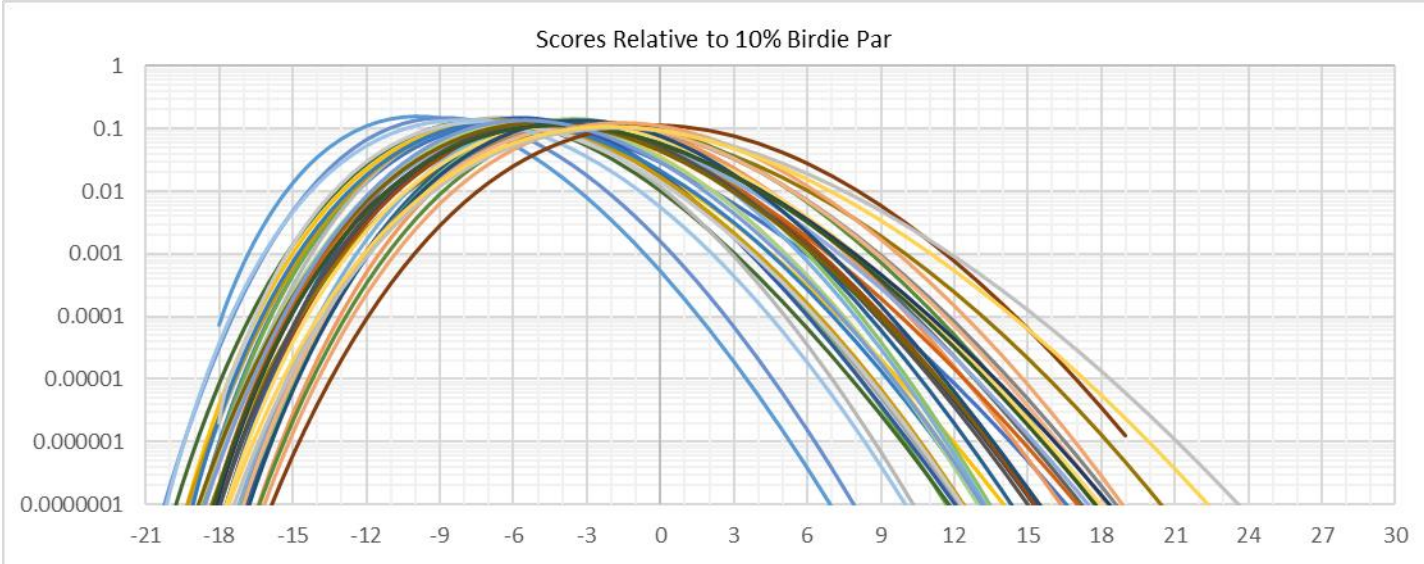
Another reason 18-under par rounds will be so rare is that the arithmetic of probability dictates that the holes with the rarest birdies will wield the most influence. For example, if a single hole offers no chance of birdie that course will never have 18 birdies in one round. (There may be an 18-under round, but it would include one or more eagles - which are themselves rare.)

For 1020-rated players, the event pars resulted in 5 holes with fewer than 1% birdies and 46 holes with fewer than 10% birdies.

If guideline pars were used, 207 holes would have fewer than 10% birdies. However, 51 of these holes would be par 2 and probably are not enough challenge for MPO competition. Another 33 have poor scoring spread widths of under 2.5 and thus heap all the scores into par. The rest are par 4 or 5 with unusually high rates of double-bogeys.

The following two charts shows the effect of deliberately ignoring the definition of par in an attempt to artificially create excitement. The first shows what would happen if pars would be set high enough so every hole offers 1020-rated players at least a 10% chance at a "birdie".

Setting par this way results in 16% of holes having more than 60% "birdies" and we would see about one score of 18-under or better every year. That's on the 40 courses studied, which are among the most difficult.



The following chart shows what would happen if pars would be set high enough so every hole offers 1020-rated players at least a 20% chance at a "birdie". Setting par this way results in 27% of holes having more than 60% "birdies" and we would see 26 scores of 18-under or better every year. And then it wouldn't be a special thing anymore.

