Has it become harder to qualify for the Pursuit?

In the 2023 Penaltyloop Podcast with Scott Gow we discussed data analytics and specifically using it to find answers to specific questions. One of those was if qualifying for the Pursuit race has become harder over the years.

With some delay, I analyzed all Sprint and Pursuit races on the IBU World Cup from the 2000/2001 season to last season (22/23), both men and women, to answer this question.

The first chart shows one dot ● for each athlete that finished 60th in the Sprint race , the last qualifier for the Pursuit race, since the 00/01 season, with the seconds behind the winner of the Sprint race on the vertical axis.

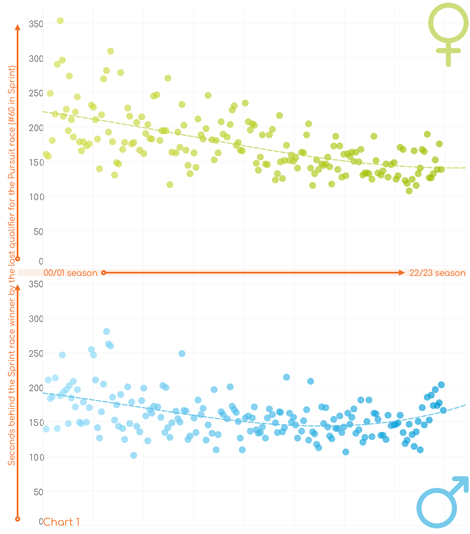

Chart 1

The top of chart 1 clearly shows that the women have seen a steady decline of how far you can be behind the Sprint race winner and still qualify for the Pursuit, although it starts to level off in the last couple of seasons. Where 23 years ago one could still qualify when over 5 minutes behind the Sprint race winner, nowadays they are lucky to qualify within three minutes of the winner.

The men in the bottom of chart 1 show a different trend, starting with lower values to begin with and a less steep decline, until around the 14/15 season where it levels off, followed by an increase starting around the 17/18 season. What is going on there?

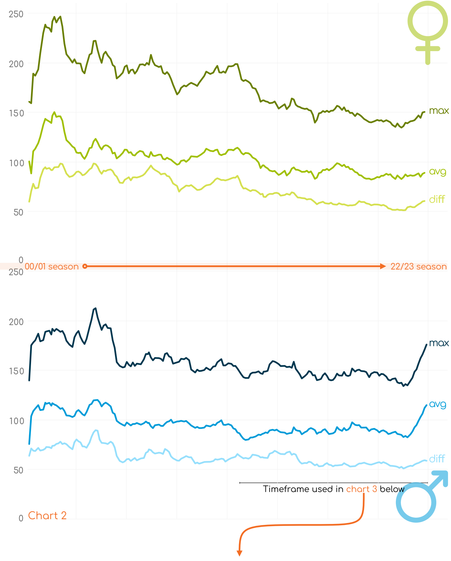

Chart 2

Chart 2 still analyzed all races but the three lines represent the moving averages, looking at the actual value and the ten prior values, of:

- The maximum value of seconds behind the Pursuit race's first starter; basically the last athlete qualifying for the Pursuit race;
- The average value of seconds behind the Pursuit race's first starter by all Pursuit race participants (60); and
- The difference between the maximum and average values from above.

To illustrate the idea behind these values, please see the following example of two pursuit races (A&B), in which each dot represents one of the 60 athletes in the race at the start:

In race A, the winner of the Sprint race had a significant lead over the rest of the athletes resulting in a field average that lays at roughly 2/3rd of the maximum seconds behind (last starter, #60).

In race B the contest was much closer and the average of the field was therefore much closer to the winner of the Sprint, but the last qualifier was quite far behind, relative to the field.

In general we can say that the larger the gap between the #1 and the field average, the more the top of the field or #1 specifically stood out. A smaller gap would generally indicate the majority of the field was closer together.

Looking at chart 2 again, we can now see that although in general the field is pretty level for the women, the gap with the lower ranked qualifying athletes is slowly increasing in the more recent seasons (increasing max and diff).

The trend for the men is quite shocking! All values were gradually decreasing or at least level until the 21/22 season in and after which the max and avg moving averages exploded. Not only are the lower ranked athletes falling further behind the Sprint winner (max), but the field average (avg) also lost a lot of seconds to the Sprint winner. This could indicate that the Sprint race winners are winning with bigger margins. In the 21/22 season the Sprint winners had a following number of seconds lead over the runner-up: 12-18-14-7-7-7-18-7-22 (avg. 12.4). Some bigger gaps, but nothing crazy just yet. The 22/23 season however saw a tall Norwegian win all eight Sprint races, and with the following leads over the runner-up: 10-43-18-48-31-15-30-24 (avg. 27.4).

It is fair to say the trend on the men's side of the chart can be explained by the JTB, or "Just Too Bra" effect...

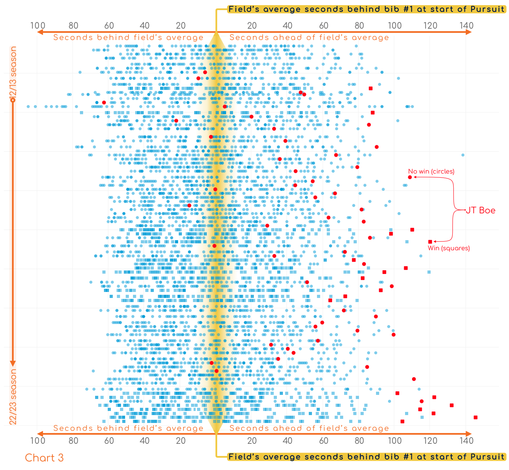

Chart 3

Chart 3 zooms in on the data JT Boe was active in: 12/13 to the 22/23 season. His impressive nine Sprint wins in a row can be found in the bottom right corner, resulting in seven out of nine Pursuit race wins. These nine races also clearly stand out from the rest of the races, with the lead JT Boe got out of the (Pursuit) gates compared to the field's average seconds behind at the start, more than a minute and a half!

The fourth and final chart shows the moving (10 previous) seasonal averages of seconds behind the Pursuit's bib #1 for bib #2, bib #10, bib #30 and bib #55 (taking into account some of the 60 athletes not finishing).

For the women we can see that generally the field is closing in on the Pursuit race's bib #1, as we already saw in Chart 1 the top 30 athletes. Following a relative long stretch of stability in which the higher bib numbers have been getting closer to bib #1. But the 21/22 season broke the trend for just one season (an interesting thing to look into a bit more another time), but then it returned to continue downwards in the 22/23 season. It will be interesting to see when the 23/24 season concludes if 21/22 was an outlier or not.

On the men's side we see the increase of the last two seasons discussed above, after a long stretch of stability, until the 21/22 season at least. Here it will be good to follow JT Boe in the next Sprint to see if he can continue his win streak, and if the competition can at least limit him in the seconds he beats them by.

Chart 4