



Handicapping Synopsis Monday-Night Racing at S.P.S.C.

Time-on-Time Handicapping

We will carry on with the time-on-time handicapping and performance data that we have used at S.P.S.C. for the last four years. Your rating will be a rolling estimate of performance of your individual boat in seconds per (nautical) mile — in the next race this handicap will divide your elapsed time. To convert your rolling time-on-time handicap to a time-on-distance handicap in the standard ECPHRF gauge you need to subtract 500. This is designed to make it easier to compare your Monday-night performance to the ECPHRF standard. Don't be surprised at how poorly PHRF handicaps correlate to actual performance. Time-on-time ratings work better over varying wind ranges than time-on-distance, more closely reflecting actual changes in performance between boats.

The Failures of PHRF Numbers and Effects on Initial Handicaps

If you look at the long term averages ending the 2012 season (last year such long-term averages were compiled) you will see that although the original time-on-distance +500 gauge transformation (in line with the drya +557 transformation and leading to ratings which are still well shy of a boat's average pace on Lake St. Clair) is woefully inadequate to express the performance difference between boats racing at SPSC. Most of this is undoubtedly owing to the difference in race readiness between the lower rated boats favoured by racers and the higher rated boats favoured by cruisers. It is impossible to separate the two and against the spirit of Monday nights to do so. Nonetheless, we will attempt to create an initial rating that gives all boats an equal opportunity to perform well — this is a value judgement which will soon disappear once the rolling average performance is established.

We are now normalizing back to the 2012 long term averages (labelled S12). This adequately fixes the gauge to prevent numbers drifting over time. Average handicaps are pinned at a PHRF value of 200 and

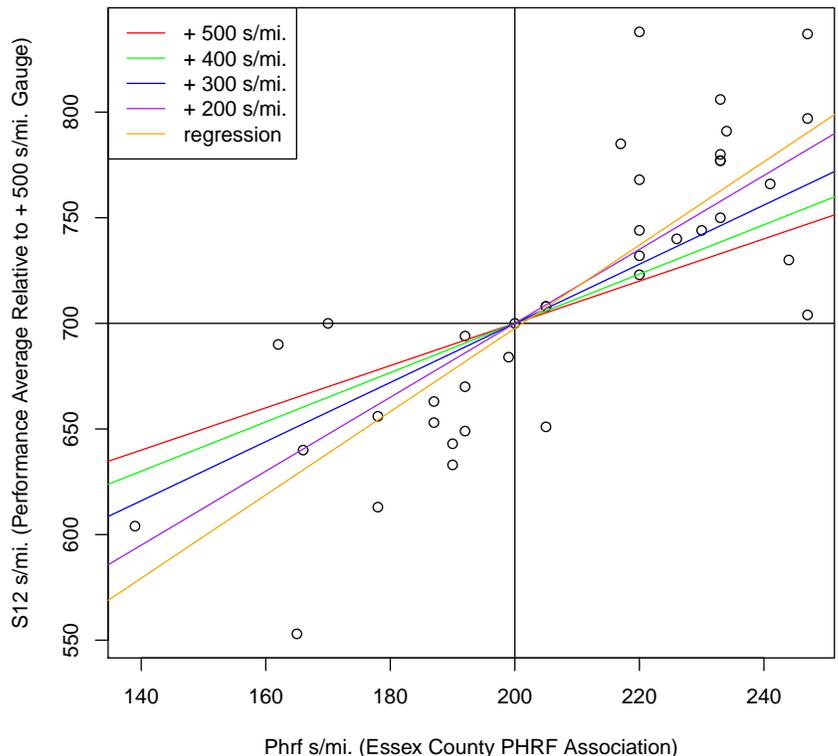


Figure 1: Relative Performance versus PHRF Rating

an S12 value of 700 to maintain the historical gauge. For new classes of boats in the middle performance range we are following a slope equivalent to a +300 transform which interpolates the data reasonably well unless there are existing boats of the class in which case I will favour their numbers. At the extremes we are falling back to the +400 slope and rounding off the last digit.

Computing the Rolling Handicap

For each race we will compute a time-on-time handicap (and call it the imputed handicap) that would give every boat the same corrected time (with a normalization factor to minimize differences from initial ECPHRF derived numbers). Each boat will have its final rating determined by collecting the previous seven imputed handicaps discarding the extreme values and averaging the middle five by geometric mean (this being time-on-time handicapping). The initial rating will be replicated sufficiently (in a small geometric series to speed up the initial handicap convergence) to make up seven numbers until the boat has raced at least seven times.

How to Apply Time-on-Time Handicapping on the Race Course

Let's state some variable name conventions — we will use t for elapsed time and k for time-on-time handicaps. Consider Δt as the difference in time between a pair of boats that shall correct out the same and Δk as the corresponding difference in handicaps. Then these must satisfy the proportionality

$$\Delta t : \Delta k = t : k$$

Let's work an example — the other boat has rating 670 — you are the scratch boat with rating 645 — then for every 645 s = 10 min 45 s of elapsed time you must gain 670 s – 645 s = 25 s on your competitor. If you finish with an elapsed time of 1 h 15 min which is approximately 7 × 10 min 45 s then you need to win by $\sim 7 \times 25 \text{ s} = 2 \text{ min } 55 \text{ s}$.

$$\begin{aligned} 2 \text{ min } 55 \text{ s} : 25 \text{ s} &\approx 1 \text{ h } 15 \text{ min} : 10 \text{ min } 45 \text{ s} \\ 175 : 25 &\approx 4500 : 645 \end{aligned}$$

Reported Corrected Times

Corrected times will be reported as $t \times \frac{k^*}{k}$ rounded to the closest second where k^* is the handicap of a scratch boat used as a common reference for all boats. The choice of k^* is arbitrary as it has no effect on how a boat will place — using the fastest boat is traditional. We will use the winning boat and report how far behind in corrected time subsequent boats are. This isn't a very meaningful number except for the winning boat itself — i.e. how much later the winning boat would have needed to finish to tie with each of the subsequent boats in turn — it is, however, more approachable than the corrected times themselves.