

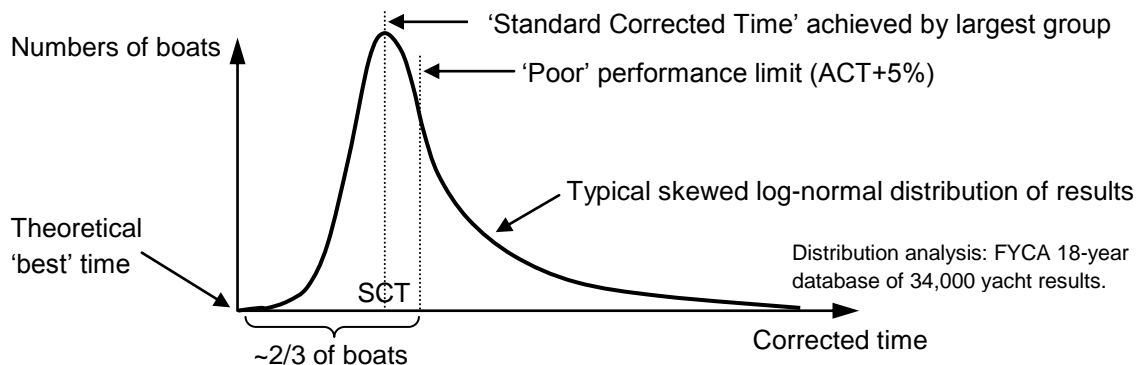
Achieved Performance Estimation

Introduction:

Handicap racing at Port Edgar YC is based on the RYA Portsmouth Yardstick approach with race results calculated by a computer program. As well as race positions, this also estimates each boat's achieved performance by the RYA YR2 procedure. The PEYC Rolling Handicap system uses this data to adjust handicaps after each race, promoting closer competition.

RYA YR2 Calculation Explanation:

For any given race, there will be an unknown theoretical 'best possible' corrected time that could be achieved by a boat sailing perfectly, tacking on the right wind shifts, avoiding adverse currents, etc. In practice, boats are not perfect and their crews make mistakes that cause them to sail slower than this optimum. The resultant distribution of corrected times within a race will typically be 'skewed' since it is easier to make mistakes than to avoid them. A few boats may come close to the theoretical achievable time, some will make an average number of mistakes & there will be a diminishing tail of slower boats making increasing numbers of errors. Performance assessment requires a comparison standard against which to measure each boat. If this standard is simply the average of all corrected times in a skewed distribution, it will be weighted towards the poor performance end and the majority of boats will appear to have sailed better than 'average', thus distorting the assessment. The performance standard is defined instead as the corrected time achieved by the largest group of boats; that is the peak or 'mode' of the distribution, defined as the Standard Corrected Time (SCT) for the race. Boats that achieve the SCT will have sailed 'to handicap'.



The YR2 procedure allows for this 'skewed' distribution in calculating the SCT. The average of corrected times for the top two thirds of boats, with established handicaps, gives the Average Corrected Time (ACT). ACT+5%, corresponding to the statistically average performer relative to handicap two thirds down the fleet, defines the 'poor performance' limit. The corrected times of all boats, with established handicaps, faster than ACT+5% are then averaged to define the SCT for the race. This revised group of boats, with a minimum of two required to make the calculation valid, may be the same as the original two thirds or more or less, depending upon the performance distribution in the race. The elapsed time for each boat is divided by the SCT and multiplied by 1000 to give its 'achieved performance'. Corrected times worse than ACT+5% are defined as 'poor' and are normally excluded in calculating a boat's average performance for long-term handicap assessment.

If boat performances are expressed in percentage terms relative to the SCT, combining data from many races demonstrates a log-normal distribution with 0% mode and two thirds of the results faster than +5%, confirming the validity of the RYA YR2 procedure.

Jim Scott - PEYC Sailing Secretary