

FYCA Race Result & RYA YR2 Performance Spreadsheet

Introduction to FYCA_YR2C.xls spreadsheet:

The new version of the FYCA Race Result & RYA YR2 performance spreadsheet runs on a PC with Microsoft Excel software. It covers a single race with up to 40 boats, using either conventional or 'average lap time' rules, calculates corrected times and arranges boats in finish order. It also carries out a RYA YR2 calculation to find the Standard Corrected Time (SCT) for the race and computes the achieved performance for each boat. The spreadsheet incorporates a 'macro' sub-routine that does the whole task on command. The spreadsheet can be printed out with all the position & performance data for your race results board and it includes notes to explain how the YR2 calculation operates. The spreadsheet can be copied for subsequent races to minimise the re-typing of boat names, sail numbers, etc. It does not have any provision to deal with multiple races to calculate series positions.

Operation:

Use a PC with Microsoft Windows and Excel 97 or later application software and load the file 'FYCA_YR2C.xls'. A dialogue box may appear warning you that the spreadsheet contains 'macros' and giving you options to 'Disable Macros' or 'Enable Macros'. Select 'Enable Macros', since the source is guaranteed virus free. It may be necessary to change your Excel security setting by selecting 'Tools' from the menu bar, 'Options' from the 'pop-down' menu & select the 'Security' tab. Click on the 'Macro Security' button and select 'Medium' which alerts you but allows you to proceed. 'FYCA_YR2C.xls' is password protected to prevent it being over-written. When the 'Password' dialogue box appears, select 'Read only' which allows you to open the spreadsheet and save it later under your own file name.

Data Input:

1. Enter the race title, date and start time in 24 hour clock format 'hh:mm:ss' if you are using real clock finish times; otherwise leave the start time as '00:00:00' if entering elapsed times.
2. Enter boat name, type & sail number information in whatever format you wish.
3. Enter a 3 or 4 digit Portsmouth Handicap value and the PY status for each boat. Status should be PY (Primary Yardstick), SY (Secondary Yardstick), RN (Recorded Number), CN (Club Number) or TN (Trial Number) and can be in capital or lower case letters.
4. Enter the finish time for each boat in the 'Finish time' column in 24 hour clock format 'hh:mm:ss'. If you are using elapsed times, enter these in the 'Finish time' column & 'Start time' as 00:00:00. Non-finisher designations DNF, RET, OCS, DSQ, etc. can also be entered in this column.
5. If using 'average lap time' rules, enter the number of laps completed by individual boats in the 'Laps' column. Spreadsheet assumes one lap if no data is entered.
6. Once all data is entered, initiate the macro by pressing 'Ctrl+y' (Control key and 'y' key simultaneously). Boats will be ordered in finish positions with SCT and performance data displayed if at least two boats contribute to the SCT calculation. The spreadsheet is also re-formatted to ensure consistent positioning of displayed data in case it has been imported from another source.

Notes:

Race position data is suppressed until a handicap number is entered for every boat with a finish time. There is a logic check that the 'Start time' is earlier than all 'Finish times' which, if false, suppresses race position data and displays 'Finish time earlier than start!' above the 'Start time' box.

Corrected times are given per lap for 'average lap time races' and are rounded to the nearest second to reflect realistic timing accuracy, following RYA advice. If two or more boats have identical corrected times, they have the same race position placing, and the next boat place is two or more behind.

The spreadsheet SCT calculation differs from the standard RYA YR2 process, by including Club Number (CN) status boats in addition to PY, SY & RN ones, since SCT accuracy is improved by averaging over as much data as possible. CN status boats are those about which the FYCA or your club has sufficient performance information to be confident of its allocated handicap. FYCA recommends this because of the relatively small numbers of PY, SY & RN yachts racing on the Forth and increasing numbers of CN status yachts based on accurate performance evidence in the FYCA's 1996-2004 database. If you want to revert to the formal RYA YR2 process, change any CN status to TN in the spreadsheet. The SCT calculation excludes all boats with Trial Number (TN) status since their handicaps are not well established.

The SCT is only considered valid if at least two boats have contributed to it, otherwise the SCT box remains blank and no performance data is displayed.

The 'Achieved performance' for each boat is calculated by dividing its elapsed time by the SCT, multiplying by 1000 & rounding to the nearest integer. The '%' column gives its performance relative to its handicap. Any boat whose corrected time is slower than the RYA YR2 'poor performance' limit (See YR2 explanation below) is shown as 'Slow' in the YR2 column. Slow performances should be excluded in calculating a boat's average achieved performance over a series or season of racing.

The 'SCT input' column shows which boats have contributed to the SCT by 'yes'. Hence all TN status boats and 'Slow' performance boats are excluded.

Warning:

If you want to shift 'PY H/cap' or 'H/cap status' information or finish times around the spreadsheet, use the 'copy' (Ctrl+c), 'paste' (Ctrl+v) and 'delete' commands. **DO NOT USE THE 'cut' (Ctrl+x) command** since this corrupts the embedded formulae and '#REF!' warnings will appear. If you do this accidentally, use the 'Edit' pop down menu from the toolbar and 'undo' commands to recover.

Printing:

The spreadsheet is formatted to print on A4 in 'portrait' mode and includes extensive notes below the results to explain how it works and the RYA YR2 process for SCT & achieved performance.

File Saving:

The file 'FYCA_YR2C.xls' is protected from being overwritten by a 'Read only' designation and can only be saved under a different name. If you attempt to save it under the same name, a warning dialogue box will appear followed by the 'Save as' dialogue box. You can store a number of result 'sheets' for a race series in a single Excel 'workbook'. Click on the 'Edit' pop-down menu in the toolbar and select 'Move or copy sheet...'. In the dialogue box select the 'Create a copy' checkbox and select where you want the sheet positioned in the workbook by using the 'Before sheet' box. Each sheet has a 'tab' at the bottom of the screen with 'Race #' already entered. You can double click on it to select and change the tab name to 'Race #1', 'Race 14 Aug 2005', etc. Hence you can duplicate a sheet with all the boats pre-entered for a regatta race series.

Problem Solving:

All spreadsheet calculation & results cells are protected from inadvertent data entry apart from those for boat name, type, sail number, handicap number, handicap status, finish time & number of laps if using 'average lap time' rules. Only the later four cells are involved with the calculations. If you import finish time data by 'copy & paste' from another spreadsheet which appears to be in the correct format of 'hh:mm:ss,' and the results macro fails to calculate the race result, check that the finish time data is in 'time' format rather than 'text' format. Text format 'hh:mm:ss' data can be converted to time format data in a separate workbook. Click on the 'Insert' pop-down menu and select the 'Function' command. In the 'Paste function' dialogue box, select 'Text' in the 'Function category' box and 'Value' in the 'Function name' box. This command converts a text string that represents a number, to a number that can then be formatted to 'hh:mm:ss' for compatibility with the spreadsheet.

Spreadsheet Workings:

All spreadsheet calculations & transfer data for the FYCA Performance Database are in columns 'P-AY' to the right of the race data columns and are open to view. Although the spreadsheet cells are 'protected' on opening or after running the calculation macro, this protection can be switched off by clicking on the 'Tools' pop-down menu, selecting the 'Protect document' command and the sub-command 'Unprotect sheet'. Protection will be re-imposed if the macro is re-run. The spreadsheet explanation notes can be modified or deleted by this route.

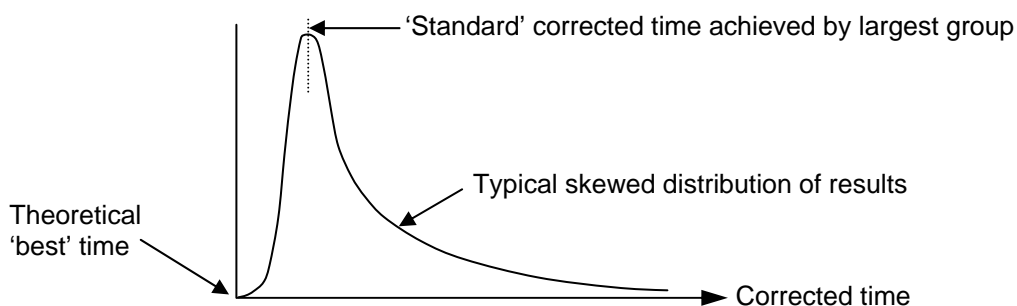
If after running the calculation macro, changes are made to handicap values or finish times that do not affect the race position order, the revised SCT & achieved performance values will appear immediately. If the changes affect the race position order, the race result data is blanked out & the calculation macro must be re-run to update the result.

Hints:

Use the FYCA & RYA YR2 published handicap values & status whenever possible and start to assess the performance of any TN status boats in your fleet. Use the YR2 assessment & update process to refine their handicaps with a view to getting them established as CN boats. Boats that sometimes sail single handed or short crewed, or with 'white' sails allowance, should be clearly identified in the race results sheet (e.g. Hunter 701 {single handed}). These performances should not be included in an overall performance assessment for the boat when fully crewed with a full complement of sails.

RYA YR2 Calculation:

For any given race, there will be a 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 across a fleet will typically be 'skewed' since it is easier to sail poorly rather than brilliantly. A few boats may come close to the theoretical achievable time; some will make an average number of mistakes and there will be broad tail of slower boats making increasing numbers of errors. Performance assessment requires the establishment of a comparison standard against which each boat can be measured. If all corrected times in a skewed distribution are simply averaged, the result will be weighted towards the poor performance end and most boats will appear to have sailed better than 'average', distorting the assessment. The performance standard is defined as the corrected time achieved by the largest group of boats; that is the peak or 'mode' of the distribution. Hence those boats that achieved this Standard Corrected Time (SCT) will have sailed 'to handicap'.



The RYA YR2 procedure allows for the typical 'skewed' distribution in calculating the SCT. The average of corrected times for the top two thirds of the PY, SY & RN boats in the race gives the Average Corrected Time (ACT). A further +5%, corresponding to the typical performance relative to handicap 2/3 down the fleet, is added to define the 'poor performance' limit. The corrected times of all PY, SY & RN boats faster than ACT+5% are then averaged to give the SCT for the race. This new group of boats may be the same as the original 2/3 or more or less, depending upon the performance distribution. The elapsed time for each boat is divided by the SCT and multiplied by 1000 to give its 'achieved performance'. Performances that are poorer than ACT+5% are defined as 'Slow' and should be excluded in calculating a boat's average performance for handicap assessment.

The FYCA has modified the YR2 procedure to include CN status yachts, in addition to PY, SY & RN ones, to improve SCT accuracy. TN boats are always excluded because their handicaps are not well enough established.

Analysis of ~16,000 yacht performances in the FYCA database from 1996-2004, including ECSW 1998, 2001, 2003 & 2004, demonstrates that the RYA YR2 procedure is accurate in finding the performance of the largest group of boats on average. FYCA clubs are strongly recommended to use this spreadsheet both to improve the quality of their race data and to help set fair yacht handicaps on the Forth.

Jim Scott - FYCA 26th Sept 2005.