

Scoring Analysis: Worst Score Discarded

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Background

The default scoring system in the Racing Rules of Sailing (Appendix A) includes the provision that “Each boat’s series score shall, subject to rule 90.3(b), be the total of her race scores excluding her worst score...” (RRS A2.1) Most regattas are scored this way after a certain number of races are completed, but that number varies from event to event.

A mid-regatta discussion among judges at a recent event led to a debate whether discarding a boat’s worst score led to a fairer or more unequal ranking. A central point of the discussion was whether discarding a boat’s worst score, in effect, penalized consistency. A related question was how often the discarded scores affected the results, particularly at the top of the standings.

Whether the “podium finishes” are affected is a particularly important point if the event is a qualifier for a subsequent event, since a goal of the competition is to select an entrant for the next level who has the greatest probability of success.

Investigation

To investigate the effect of discarded scores, fifteen 2019 regattas were selected for analysis. With a single exception, each regatta had at least 20 entrants. The events were in popular classes and in two cases were qualifiers for the World Youth Championships. The fifteen events had a total of 591 entrants and 132 races.

The scores for each event were downloaded into an Excel spreadsheet and the gross (all races counted) and net (worst race score excluded) rankings were determined.

To calculate “consistency” the variance of each boat’s scores was calculated. The variance (σ^2) of a population is the average of the squared distance from the mean:

$\sigma^2 = (\sum (x - \bar{x})^2) / n$ where n is the number of races and \bar{x} is the boat’s mean score.

Data

The results for the regattas are shown on the following page and are attached as an embedded Excel workbook:

An image of one of the event spreadsheets (F18 North American Championship) appears below:

[illegible]

Scoring Analysis: Gross vs. Net Scores

In this case, the second-place finisher in the rankings with the worst race score discarded would have dropped to fourth place if all scores were included. The values in the column “Rank Diff” shows the effect of discarding the worst score. A negative number with a green background indicates a benefit (position improved) while a positive number with a red background indicates that a boat’s ranking moved downward when the worst score was discarded.

The 2019 Lightning North American Championship was originally scored without discarding a boat’s worst score because only five races were completed, which was an insufficient number. In this analysis, it was re-scored by discarding each boat’s worst score.

The 2019 New York YC Invitational Cup was created with the intention of using all scores. Again, in this analysis, it was re-scored by discarding each boat’s worst score.

The 2019 Laser Radial Nationals (Lauderdale Yacht Club, January 11-14) was particularly notable:

- The top five finishers (based on net score) all benefitted by an average of more than four places due to the discarded score. The second and third place finishers would have dropped to seventh and eighth, respectively, if all score had been included. The fifth-place finisher would have dropped to twelfth.
- Even though a quarter of the competitors (22 out of 89) did not have their ranking affected, six of those 22 entered the event, but did not compete in a single race and were therefore tied for last place.
- The highest-ranking competitor on gross score dropped to sixth when the worst score was discarded.

Rank Net	Rank Gross	Rank Diff
1	2	-1
2	7	-5
3	8	-5
4	9	-5
5	12	-7
6	1	5
7	5	2
8	3	5
9	14	-5

In none of the other events did the discarded worst score make so large a difference.

Analysis

For roughly half of the 591 entrants in the ten regattas (47%), including all scores or discarding the boat’s worst score made no difference in their overall ranking. The remaining competitors are evenly split between those who benefitted and those who were penalized (27% and 26%, respectively)

For twelve of the fifteen events, excluding a boat’s worst score affected the first through third place finishers. Either the order of ranking or whether a boat achieved one of the first three positions was affected. In other words, whether or not a score was discarded affected the top positions in 80% of the events that were studied.

In twelve of the fifteen events studied, a more consistent team had their final ranking adversely affected by the default practice of discarding a boat’s worst score under rule RRS A2.1.

Scoring Analysis: Gross vs. Net Scores

Recommendation

In those events that serve as qualifiers for the next level of competition and the goal of the Organizing Authority is to select the entrant with the best chance to win or perform well at the next level, consistency should be rewarded and, in those events, a boat's worst score should not be discarded.

Attachment:



Scoring
Analysis.xlsx

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