Improving Selection Boards

Developing a weighted relative value score

by LtCol Roy L. Miner

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In July 2019, Gen Berger, the 38th Commandant of the Marine Corps, published his *Commandant's Planning Guidance*. Within the priority focus area of force design, he addresses an array of personnel topics. One of those topics is fitness reports and the current Performance Evaluation System. There are eight elements related to the Performance Evaluation System that he states, at a minimum, need evaluation to assess whether they merit a change. Of those eight elements, at least six would assist board members in the conduct of their analysis when determining the best qualified Marines for promotion, command, education, or other assignment during a selection board. Additionally, if done correctly, those six elements can be developed into a metric that would reduce the variation of interpretation by individual board members when considering a Marine for selection. Board members use the Master Brief Sheet (MBS), individual fitness reports, and other documents within a Marine's Official Military Personnel File (OMPF) to determine eligibility for selection. It is a large array of data to review and consolidate during a three to five minute brief for other board members to determine if a Marine meets selection criteria when compared to other Marines. Yet, each member of that board will have a different interpretation of elements within each individual OMPF, and when analyzing a MBS, each board member most likely gives different credence and weight to certain data elements than other board members. There is no explicit congruency between board members. One of the byproducts at the root of the Commandant's guidance with respect to evaluating changes in the personnel evaluation system is the investigation into changes within the fitness reports that will make it easier for board members to review and evaluate quantitative data with minimal variation in interpretation. Additionally, with a majority of the analysis of the quantitative data being completed for them, board members could have more time to analyze other elements within the Marine's OMPF such as billet accomplishments detailed in a fitness report. This article will provide an example of how fitness report metrics can be developed and weighted using data resident within the Master Brief Sheet to meet the *Commandant's Planning Guidance*.

Board Member Evaluation General Process

There are a number of elements in the MBS that a board member will use to evaluate a Marine's performance in grade or over the course of their career. These elements can range from physical fitness scores to awards to education to weapons qualification. The main factors that determine a board member's evaluation are the reporting senior (RS) relative value (RV) scores, the reviewing officer (RO) comparative markings, and the RS and RO comments. The focus of this article will be the RV scores based on the RS markings. There are a number of factors a board member will take into account when evaluating the RV. One of the factors is the hourglass profile metric that breaks down the percentage of fitness reports a Marine Reported On (MRO) has in the upper, middle, and lower third and the ratio of the percentage of reports in those third when compared to each other. Also, a board member may look at the RV score at processing and the cumulative RV score, taking note of whether there was an increase or a decrease between the two scores. A board member may also take note of the number of fitness reports written by the RS and the length of the reporting period. All in all, there are a number of factors that a board member may review, note, and record from their research into the MRO's record and MBS in order to brief other members of the board concerning the MRO's consideration for selection. Yet, given the number of factors a briefer will review, it is probably unlikely that any one board member would brief the same conclusions as another member would if they were responsible for reviewing the same individual MRO's package. Where one member may note an 82 RV score from a two month long observed fitness report, another briefer may not, thinking it is self-explanatory to other board members. Additionally, when incorporating the short-observed time, low RV score into the hourglass profile metric, it will have the same weight in the overall hourglass metric as a twelve-month upper third report and a ten-month middle third report. Meaning, if there were only these three reports, the

board members would see an hourglass profile metric reflecting 33 percent of reports in the upper third, 33 percent of reports in the middle third, and 33 percent of reports in the lower third. This despite in our hypothetical situation only 8.3 percent of the observed time in the MRO's career accounts for a lower third report. This hypothetical would most likely be caught by board members, but it may be more problematic to account for the contributions of reports to the hourglass metric as the MRO receives more and more fitness reports throughout their career. Hopefully, if not addressed by the briefing board member, the other board members would note it as they all have an opportunity to review the MRO's MBS during the three to five minute given brief. However, there is no guarantee, and there is most likely variance in how one board member analyzes and evaluates a MRO's package over another. The onus of the analysis and presentation of the MRO's MBS belongs to only one individual board member. The quality of the analysis and presentation is dependent on the experience and ability of the board member to succinctly articulate a Marine's career for all board members to evaluate, and every board member is a rookie at this process at least once. So, the current evaluation process in selection board proceedings requires the sharp analysis and insight on the part of the board to present the best possible brief on behalf of the MRO. However, much of this analysis can be taken into account (length of observed fitness reports, number of reports, RV) and combined into a single metric for the board to evaluate, effectively reducing the degree of variability in interpretation of the RV scores between board members.

Developing an Evaluation Metric Using Utility Factors

The following section describes a method that addresses the *Commandant's Planning Guidance* in weighting reports and provides board members a single evaluation metric to reduce variability in interpretation and captures the MRO's RV scores over their career. This can be done using data currently resident within the MBS of the MRO. No new data would need to be added. The fundamental idea behind what the metric is evaluating is an average weighted percentage when compared to a perfect career 100 RV for the MRO where the weights are determined by the length of the report and the number of reports a RS has written for Marines of a similar rank, and it will be shown there is no disadvantage between one Marine having a number of reports short in duration by reporting seniors with shallow profiles to another Marine with lengthy reports written by reporting seniors with large profiles.

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A weighting method for fitness reports can be employed by introducing utility functions for the length of a report and the number of reports written by a reporting senior. We can also assume that these two functions will have equal weighting in determining the final evaluation metric (i.e., each value derived from the individual functions contribute half of the final weight). The utility function for report length the author proposes in this article is f(x) = 1-e^(-2x/m) where "x" is the observed length of the fitness report in months and "m" is a utility factor that remains constant for the population of MROs in determining the weight contribution for length of reports. Additionally, the utility function for reporting seniors' total number of reports is similarly f(y) = 1-e^(-y/r) where "y" is the observed number of reports a reporting senior has written for Marines of similar rank and "r" is a utility factor that remains constant for the population of MROs in determining the weight contribution for a RS profile size. The choice of "m" and "r" and the reasons behind it can vary, but for the purposes of this article, we will assume that the constant "m" will be six months and the constant "r" will be eight reports. Table 1 depicts the utility function values for the various length of reports from one to twelve months if "m" had a value of six months. Thus, a fitness report with a reporting period of four months would have a weight of 0.7364. Table 2 depicts the utility function values for the various RS quantity of reports written from 3 to 40 if "r" had a value of 8 reports. A fitness report where the reporting senior profile size is

Report Length Utility Constant	6											
Report Length	1	2	3	4	5	6	7	8	9	10	11	12
Utility Values	0.2835	0.4866	0.6321	0.7364	0.8111	0.8647	0.9030	0.9305	0.9502	0.9643	0.9744	0.9817

Table 1.

RS Reports Utility Constant	8																			
RS Reports	3	4	5	6	...	13	14	15	16	...	23	24	25	26	...	36	37	38	39	40
Utility Values	0.3127	0.3935	0.4647	0.5276	...	0.8031	0.8262	0.8466	0.8647	...	0.9436	0.9502	0.9561	0.9612	...	0.9889	0.9902	0.9913	0.9924	0.9933

Table 2.

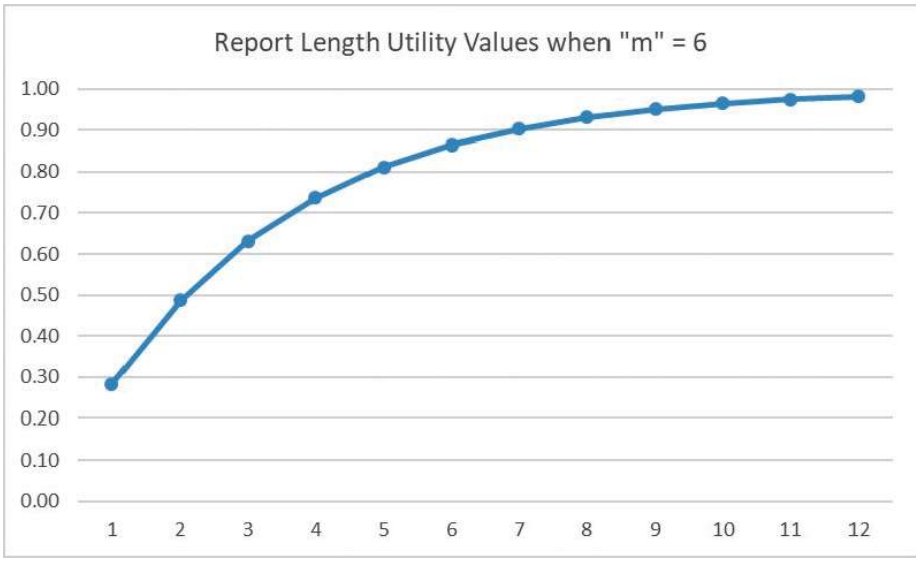

Figure 1. *(Figure provided by author.)*

twelve reports would have a weight of 0.7769. Figure 1 demonstrates the rate at which the utility function value increases as the length of the fitness report "x" increases. Similarly, Figure 2 demonstrates the rate at which the utility function value increases as the number of reports "y" increases for an RS profile size. Note that the incremental change in utility function values decrease as the length of the report or the number of RS reports written increases. This indicates the eventual calculated weights between reports will be more similar to each other the longer the observed reporting period is or the more reports written in the RS profile. In other words, the eventual calculated difference in weight between a one-month observed report and a two-month observed report will be greater than the difference between an eight-month observed report and a nine-month observed report—similarly for the number of written reports.

Next, we would multiply the RV for each individual report against the utility factors derived from the above equations and compare it to the "what if" of a 100 RV report. In our example numbers above, if a MRO had a 92.75 for an individual fitness report that was 4 months in length and was one of 12 reports, then we would calculate the metric for that individual report as 92.75(0.7364) + 92.75(0.7769) = 68.3011 + 72.0575 = 140.3586. We then compare that summation to the possibility of the fitness report having a 100 RV, which would yield 100(0.7364) + 100(0.7769) = 73.64 + 77.69 = 151.3300. And to compare how close it is to the 100 RV, we would divide the observed RV by the 100 RV calculations which yields 140.3586/151.3300 = 92.7500. So, there is no drop or increase to the RV of an individual fitness report when applying a weight to it based on the length of the report or the number of reports written by the reporting senior. An individual with a 92 RV for a report that is 2 months in length from a RS with 5 reports written in their profile will be the same as a 92 RV for a report that is 8 months in length from a RS with 15 reports written in their profile. The influence of the weight will come into effect when we aggregate all the fitness reports of a Marine's career using the above calculated methods.

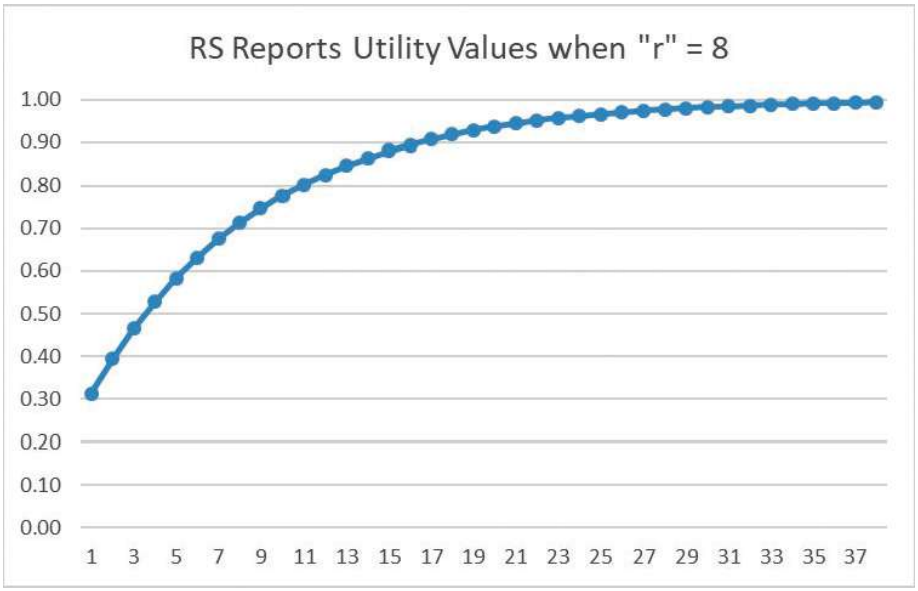

Figure 2. *(Figure provided by author.)*

Table 3 (on following page) shows an example where we include two additional fitness reports with the example fitness report above and the resulting calculations. Let us assume in addition to the one we outlined above with the RV of 92.75, we have a fitness report with a RV of 80 that is three months in length and written by a RS with a profile size of 4. The other has a RV of 98.5 that is 10 months in length and is written by a RS with a profile size of 25. The MBS would show this as the MRO having one report in the lower third, one in the middle third, and one in the upper third. Hopefully a board member would see these three fitness reports as above average overall with some analysis and reasoning, and if you do take the average of the three RVs (each report contributing the same weight), you would have a value of 90.42. But using the utility equations and method described above would yield the metric 92.29, a high middle third value. While the difference between 90.42 and 92.29

	Report Length	# Reports Written	Rpt Avg	Report Length Utility Value	Reports Written Utility Value	Rpt Total Pts	Max Poss	Weight
FitRep1	4	12	92.75	0.7364	0.7769	140.3560	151.3273	33.9%
FitRep2	3	4	80	0.6321	0.3935	82.0472	102.5590	23.0%
FitRep3	10	25	98.5	0.9643	0.9561	189.1583	192.0389	43.1%
			Total Avg			Total All Reports	Total Max Poss	Weighted Utility Metric
			90.42			411.5616	445.9252	92.29

Table 3.

does not seem significant, on the 20 increment RV scale of 80–100 it is a 9.35 percent increase. Board members have no prescribed method of how to gauge the values in aggregate. Maybe their estimate would yield above 90, maybe below 90. In this instance the 80 RV report accounts for 23.0 percent of the weight of the metric, the 92.75 RV report accounts for 33.9 percent of the weight of the metric, and the 98.5 RV report accounts for 43.1 percent of the weight of the metric. The weight here is calculated as the percentage of the maximum possible points for an individual fitness report with the total maximum possible points. As more and more fitness reports are included, the weight each fitness report contributes to the overall metric becomes more and more distributed. If we change the first fitness report to a RV of 85, there is no change to the breakout of thirds one would see in the MBS. The average RV of the three fitness reports would now be 92.08, high middle third. The metric calculated using the utility equations would be 93.44, just cresting into the area that is considered the upper third. There would be no change to the weights. Table 4 provides an example of a metric derived from ten fitness reports and each fitness report's associated weight. As you can see, the distribution of the weights spreads out a little more evenly as more observed fitness reports are introduced into the calculation of the metric and the reports with longer report lengths and higher amounts of reports written are comparable to each other in weight. The short reports with small profiles accounts for a smaller degree of the overall weight when compared to the other reports as opposed to an even ten percent since it is one of ten reports.

There may be some arguments that this method reduces a Marine's career to just a number and board members will only focus on that number. An answer to that argument is this metric reduces the amount of analysis a board member may have to complete when reviewing the MBS. It will also reduce the variable amount of interpretation between the different board members concerning the data that is available for them to review in the MBS and how to interpret the MRO's hourglass profile. Board members will look at the numbers, regardless. But there is no guarantee that they are all looking at them in the same manner or would brief them the same way. They will look at a fitness report with a low RV value and note that it is only one or two months long. They will look at the number of Marines a RS has written on to see if that RS has a deep or shallow profile. They will look at the relative value and see if it is increasing or decreasing under the same reporting senior. They will also take into consideration whether the RV is low given it is the first fitness report in a new rank for that Marine. So the numbers can have an influence on the board member and can influence how they brief a Marine's package. Additionally, the longer the career, the more numbers there are to review and interpret for the briefer. The numbers can have an influence on how the other board members, as they listen to the brief and review the MBS, interpret the Marine's career, and the numbers determine the structure and shape of the "hourglass" profile that all board members see but may interpret differently. Additionally, there are still other elements within the MBS a board member should review before determining their final assessment for the package. Reducing the numerical analysis for board members can provide them more time to evaluate other elements of the fitness report such as billet accomplishments over the career as well as Section I and K comments over the career.

	Report Length	# Reports Written	Rpt Avg	Report Length Utility Value	Reports Written Utility Value	Rpt Total Pts	Max Poss	Weight
FitRep1	3	12	82.5	0.6321	0.7769	116.2417	140.8990	9.3%
FitRep2	3	17	92.75	0.6321	0.8806	140.3018	151.2688	10.0%
FitRep3	9	15	98.5	0.9502	0.8466	176.9905	179.6858	11.9%
FitRep4	12	25	93.25	0.9817	0.9561	180.6949	193.7747	12.8%
FitRep5	1	3	80	0.2835	0.3127	47.6944	59.6179	3.9%
FitRep6	9	15	86.75	0.9502	0.8466	155.8774	179.6858	11.9%
FitRep7	12	21	92.5	0.9817	0.9276	176.6051	190.9245	12.6%
FitRep8	3	3	90	0.6321	0.3127	85.0348	94.4831	6.2%
FitRep9	11	17	94.5	0.9744	0.8806	175.2980	185.5005	12.2%
FitRep10	6	6	96.54	0.8647	0.5276	134.4125	139.2298	9.2%
			Total Avg			Total All Reports	Total Max Poss	Weighted Utility Metric
			90.73			1389.1511	1515.0700	91.69

Table 4.

Conclusion

The above method described could also be employed to determine a weighted metric for each rank in a similar fashion the MBS does currently. Regardless, there are a number of methods that can be used to weight the fitness reports. The use of the utility functions in this article is simply one of many methods that can be employed. Should those exact utility functions be used? In the author's opinion, not necessarily. The utility constants for report length and reports written would not need to be six and eight, respectively. Those were simply arbitrary numbers picked to demonstrate the examples in this article. But the author does hold the opinion that it should be a function where the difference between the weights diminishes as the length of the report or the number of reports written by the RS increases. Thus, a function that yields a horizontal asymptotic curve with a decreasing slope as the report length and number of reports written by the RS increases.

The described method only works for the RV derived from the RS markings and profile, and this is only one aspect of data the selection board uses to make an assessment. Could you use the same type of metric for the RO's comparative assessment marking? In the author's opinion, no. A RO may not necessarily have been the MRO's RO for the full length of the reporting period—nor may they have the same direct observation time of the MRO as the RS. Ideally, they would but that is not always the case and recruiting duty can serve as a good example. Additionally, their markings do not necessarily fall out in a manner where you could have an ordinal ranking as you do with the current RV metric. Does a metric need to be developed? The answer to that question is, much like the theme of this article, whether or not the metric would assist a board member's responsibility in analyzing, understanding, and briefing the package. The goal is not to reduce the selection criteria to a number. The goal is to assist the board members in their preparation and briefing of the individual's selection package and reduce the variability in perception amongst board members when it comes to evaluating metrics. If that is the goal, then there are probably a number of ways one can analyze the collective comparative assessments from a Marine's ROs since ROs with large profiles will heavily influence the current metrics used in the hourglass profile. But that would be a separate article. The method described in this article is merely a proposal to what the Commandant published in his guidance with respect to personnel and the Performance Evaluation System.

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