

## STATISTICAL CONVERSION OF RAW SCORE TO SCALED SCORE THROUGH BEST FITTED DISTRIBUTION MODEL FOR REMOVING EXAMINERS' BIAS

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### ABSTRACT

The selection process of recruitment in any post poses two types of problems for an authority. The first problem is related to both the online or offline exam process, in which two or more test paper sets are used (difficulty bias) or several examiners evaluate the same test paper (examiner's bias). This necessitates normalization of the scores and the examination administrators use the equi-percentile method for this purpose. With this equi-percentile method, both the strict and lenient evaluation can be brought on a par with same scale level. The second type of problem relates to a similar constraint faced when differences exist in difficulty level for two or more sets of question papers. The objective of the present study is to statistically convert raw scores to scaled scores using equi-percentile method so as to overcome these problems. The study was conducted upon the examination scores of a subject "Bengali" over a sample size of 5525 examinees evaluated by 23 examiners during April-May 2019. The answer scripts were randomized and then placed before different examiners after proper coding. This satisfies the assumption of normality for each individual examiner. But as the evaluation process differs due to the inherent bias of each examiner, the equi-percentile method has to be applied to smoothen out the evaluation bias. In this case, examiner having maximum median (raw score) is considered as reference. So all the other marks given by different examiners are transferred to the same distribution pattern prevailed with the reference Examiner. In this case, raw scores for reference Examiner is converted to percentile rank. Then considering percentile values as independent parameter and raw marks as dependent parameters, an equation is formulated after checking the nature of the curve which fits best to the data. Then the same procedure is replicated for all the examiners. The Examiner's bias cannot be removed even if equi-percentile methodology is performed for each of the subjects for each examinee because the percentiles are not additive in nature (because it is a rank, which is a relative measure) therefore, there shall be a problem while preparing the final merit list. Now by converting all the raw scores to scaled scores by method of distribution based equalization of scores depending upon the percentile rank solves the problem, as all the raw scores converted to scaled scores are absolute values and hence based on this the merit list could be prepared.

**KEYWORDS:** Equi-Percentile Method, Median, Percentile Rank, Examiners Bias, Fitted Distribution, Scaled Scores

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