

BANDING

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1. Core Definition

Banding refers to an established psychometric technique employed in high-stakes assessment settings, most notably within personnel selection, designed to mitigate the effects of measurement error on high-impact decisions. This approach dictates that raw test scores are not analyzed individually but are instead aggregated into predefined score ranges known as score bands. When this methodology is utilized, all applicants whose scores reside within the boundaries of a single band are formally regarded as possessing **equivalent levels of ability** or qualification, regardless of minor numerical variance. This equivalence necessitates that if a selection choice must be made among candidates in the same band, supplementary criteria--such as structured interviews, job experience, or educational background--must be introduced as tiebreakers, moving the focus away from the test score alone.

The institutional application of banding serves a dual purpose: it addresses the statistical reality of test score limitations and frequently aims to improve the fairness and diversity outcomes of selection processes. By treating scores separated by minimal differences as equivalent, banding resists the temptation to rely on arbitrary cutoffs that might inadvertently screen out qualified candidates based on negligible, unreliable score variations. For instance, in a university grading context, banding allows a student scoring 95 and a student scoring 98 to both receive the top grade (A or equivalent), provided both scores fall within the 90-100 band. This generalization of performance acknowledges that distinguishing between a 95 and a 98 may not reflect genuine differences in mastery but rather temporary factors or test measurement fluctuations.

2. Theoretical Basis: Standard Error of Measurement (SEM)

The construction of score bands is rooted firmly in classical test theory and relies critically on the calculation of the Standard Error of Measurement (SEM). The SEM is a statistical estimate that quantifies the degree of error inherent in a specific test score, essentially representing the range within which a test taker's true score is likely to fall if they were to take the test multiple times. If a selection instrument were perfectly reliable (a theoretical impossibility), the SEM would be zero. Since all standardized tests contain some degree of error, the SEM provides the statistical rationale for not differentiating between scores that are too close together to reliably indicate a true difference in competence.

To establish a score band, proponents often define the band width using one or more multiples of the SEM (e.g., 1 SEM, 1.5 SEM, or 2 SEMs). For example, if the SEM for a selection test is 5

points, a common banding practice might define a band width as 1 SEM, meaning any scores within a 5-point range are considered equivalent. Alternatively, a more conservative approach might use 2 SEMs, establishing a 10-point band. This methodology ensures that the distinction between candidates is made only when their observed scores differ by an amount statistically larger than the expected error, thus increasing the probability that the observed difference reflects a **true difference in ability** rather than random noise or measurement fluctuation.

The utilization of the SEM directly addresses the concept of the confidence interval associated with a score. If Candidate A scores 80 and Candidate B scores 78, and the SEM is 3 points, the 95% confidence intervals for their true scores significantly overlap, indicating that it is impossible to state with sufficient statistical confidence that Candidate A is truly more qualified than Candidate B based solely on the two-point difference. Banding institutionalizes the recognition of this overlap, preventing selection decisions from being based on the two-point difference. Instead, both candidates are grouped together, and subsequent selection criteria, unrelated to the potentially unreliable numerical difference, must be employed to determine who advances, thereby improving the statistical validity of the overall selection process.

3. Applications in Personnel Selection

In Industrial-Organizational Psychology, banding is predominantly applied to the selection phase of hiring, particularly when using cognitive ability tests or standardized knowledge examinations. These tests often exhibit high predictive validity but frequently produce high levels of adverse impact against certain demographic groups. When traditional rank-ordering is used, even small score advantages translate directly into higher placement on the eligibility list, often resulting in disproportionate hiring rates across protected classes. Banding attempts to mitigate this adverse impact by maintaining a larger pool of statistically equivalent candidates from which diverse selections can be made, aligning the process with both efficiency and equity goals.

When a band is established--for example, the top band ranging from 90 to 100--all applicants within this band become equally eligible for immediate selection. Rather than automatically choosing the applicant who scored 100 over the applicant who scored 90 simply because of a higher raw score, the organization can choose to select candidates based on secondary, often non-cognitive, criteria such as structured interview performance, demonstrated leadership qualities, or specific background experiences relevant to the job. This approach allows employers to fulfill the need to hire candidates who are **highly qualified** (as evidenced by their placement in the top band) while simultaneously integrating other organizational goals, such as fostering workforce diversity, without sacrificing the minimum required level of competence.

Crucially, the rule governing the selection process changes once banding is implemented. Typically, organizations utilize a "sliding band" or "fixed band" approach. The fixed band remains

static until all scores within it are exhausted before the next lower band is opened, while the sliding band dynamically moves down the scoring scale only when the highest-scoring individual remaining is selected, creating a new band threshold. Regardless of the specific method adopted, the core procedural rule dictates that no candidate from a lower band may be considered for selection as long as qualified candidates remain available in a higher, unexhausted band. This critical rule maintains the principle that higher bands represent genuinely superior performance zones and ensures that the integrity of the score groupings is respected throughout the hiring cycle.

4. Use in Academic and Educational Grading

While often examined through the lens of employment law and psychometrics, the conceptual framework of banding is perhaps most widely utilized and intuitively accepted in educational assessment and grading systems. In academic environments, banding structures are fundamentally necessary to convert continuous numerical scores (e.g., percentages out of 100) into discrete, meaningful categorical grades (e.g., A, B, C, or pass/fail designations). This mechanism acknowledges that the learning process and subsequent measurement are not perfectly precise or linear, and thus minor variations in test performance should not unduly affect a student's final comprehensive assessment of mastery over the subject material.

In standard university grading schemes, the establishment of score bands is explicitly defined, often with predetermined cutoffs set at conventional intervals (e.g., 90-100 for an A, 80-89 for a B). The primary function here is to ensure clarity, standardization, and equitable communication of academic standing; a student who achieves a 91 has demonstrated the same categorical level of excellence, or mastery, as a student who achieves a 99. Without banding, assigning a "grade" would be functionally complex, as every single numerical score would require its own unique designation and interpretation, unnecessarily complicating transcripts and evaluations of overall educational achievement. Educational banding thus serves as a powerful communication tool, translating detailed, complex performance data into easily understandable benchmarks of competence that are consistent across different courses and institutions.

Furthermore, educational banding often incorporates elements of qualitative assessment within the established score range. A teacher might band scores using a statistical method derived from observed score distribution (norm-referenced banding) or use fixed, absolute performance standards (criterion-referenced banding). Within that established band, however, a student's final grade might be adjusted or determined by supplementary, non-test evidence, such as classroom participation, demonstrated effort, ethical conduct, or documented improvement over time. These factors reflect a more holistic view of the student's engagement and learning trajectory, paralleling how secondary criteria are employed in personnel selection banding to break ties among statistically equivalent applicants.

5. Advantages and Disputed Benefits

The primary advantage cited by proponents of banding is its adherence to rigorous psychometric principles regarding test reliability and validity. By only differentiating between scores that exceed the margin of error, determined by the SEM, banding ensures that selection decisions are statistically defensible and grounded in the limits of measurement precision, thereby reducing the risk of making erroneous distinctions that lead to unfair or indefensible outcomes. This strong scientific grounding provides a robust defense against legal challenges that question the technical integrity of the selection process, provided the methodology for calculating the SEM and determining band width is sound and consistent.

A secondary, and often more highly debated, benefit relates directly to organizational diversity and the reduction of adverse impact associated with standardized testing. By grouping high-scoring applicants, which often include both majority and minority candidates, into the same eligibility pool, banding allows organizations to prioritize diversity goals and other mission-critical workforce needs while still selecting from among the most highly qualified individuals. Extensive research suggests that while banding does not eliminate underlying score differences between demographic groups, it effectively facilitates the hiring of qualified minority candidates who might otherwise be bypassed due to rank-ordering based on statistically insignificant score differences. Proponents thus argue that maximizing diversity among a high-competency pool ultimately leads to better organizational performance, fostering innovation and improved public relations.

However, the claimed advantages regarding strict fairness and meritocracy are heavily disputed by critics. Critics argue that while banding may achieve valid diversity goals, it inevitably does so at the cost of strict individual meritocracy, as it intentionally ignores real, albeit small, differences in performance between individuals within the same band. Furthermore, a central criticism focuses on the potential for secondary criteria used for tiebreaking (e.g., subjective interviews or performance reviews) to introduce new, potentially unmeasured biases. If these criteria are themselves susceptible to bias or lack strong predictive validity, the fairness gained by using the statistically defensible bands might be immediately lost by the subsequent, less objective selection steps, undermining the entire premise of the banding strategy.

6. Legal and Ethical Debates

Banding has historically been the subject of significant legal scrutiny, particularly in the United States, where employment practices must comply with Title VII of the Civil Rights Act of 1964 and associated guidelines established by the Equal Employment Opportunity Commission (EEOC). The core legal debate revolves around whether banding, when implemented explicitly to increase minority representation, constitutes a permissible and statistically sound effort to reduce adverse impact, or whether it functions as an unlawful quota or preference system (often termed reverse

discrimination) by passing over higher-scoring candidates in favor of lower-scoring ones within the same band.

Historically, legal rulings have been mixed, largely dependent on the rigorousness and statistical justification of the specific banding method implemented. Courts generally look favorably upon banding when it is clearly and statistically justified by the calculation of the SEM, and when the secondary selection criteria used within the band are rigorously validated as being job-related and unbiased. Conversely, banding schemes that appear arbitrary, use excessively wide bands unsupported by psychometric data, or are implemented primarily as an unsubstantiated quota system without strong psychometric defense face significantly greater legal challenges and risk being overturned as discriminatory.

Ethical criticisms also focus intently on the issue of procedural transparency and perceived justice. Critics argue that candidates who score marginally higher but are ultimately passed over in favor of a lower-scoring applicant within the same band may perceive the entire selection process as fundamentally unfair, even if the difference is statistically unreliable. This perception of unfairness can lead to low morale, increased cynicism, and distrust in the testing process, particularly among the highest performers who feel their superior scores were arbitrarily ignored. Thus, while banding may satisfy stringent statistical requirements and legal obligations to promote diversity, it often faces an ongoing challenge in meeting the ethical standard of perceived procedural justice among all job applicants.

Further Reading

[Standard Error of Measurement \(Wikipedia\)](#)

[Personnel Selection \(Wikipedia\)](#)

[Psychometrics \(Wikipedia\)](#)

[EEOC Uniform Guidelines on Employee Selection Procedures](#)