



**Deltek**  
Marketplace Partner



— The Definitive Guide to  
— Pre-Employment Testing



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# What are Pre-Employment Tests?

## Pre-Employment Tests Defined

Pre-employment tests are an objective, standardized way of gathering data on candidates during the hiring process. All professionally developed, well-validated pre-employment tests have one thing in common: they are an efficient and reliable means of gaining insights into the capabilities and traits of prospective employees. Depending on the type of test being used, pre-employment assessments can provide relevant information on a job applicant's ability to perform in the workplace.

Pre-employment tests have become increasingly popular in recent years as a way to filter and manage large applicant pools. The Internet has made it easier than ever for job-seekers to apply for jobs – one [study](#) estimates that, on average, a whopping 250 resumes are submitted for every corporate job opening. Some job-seekers, known as “resume spammers,” distribute their resumes across the web in blasts, with little regard to required qualifications or job fit. With applicants spending just an average of **76 seconds** reading each job description, it is unsurprising that recruiters report that over 50% of job applicants do not meet the basic qualifications of the job. As a result, most hiring managers don't have the bandwidth to thoroughly review every candidate's application, with recruiters reportedly spending an average of just **6.25 seconds** reading each resume.

In this environment, pre-employment tests can provide tremendous value for organizations seeking to find the right talent. By adding pre-employment assessments to the candidate selection process, companies of all sizes can get a better handle on the vast pool of candidates applying to open positions. And while technology may be responsible for the increase in applications, it also provides an answer, by making it much simpler to integrate pre-employment testing into the hiring process.



**76 seconds**

Average time applicants spend reading job descriptions



**250 resumes**

Average number of submissions per corporate job post



**50%**

Applicants who do not meet basic qualifications of the job



## Types of Pre-Employment Tests

There are many different types of pre-employment tests. In this eBook, we will discuss five of the major types of assessments:



**Cognitive  
Aptitude**



**Personality**



**Emotional  
Intelligence**



**Risk**

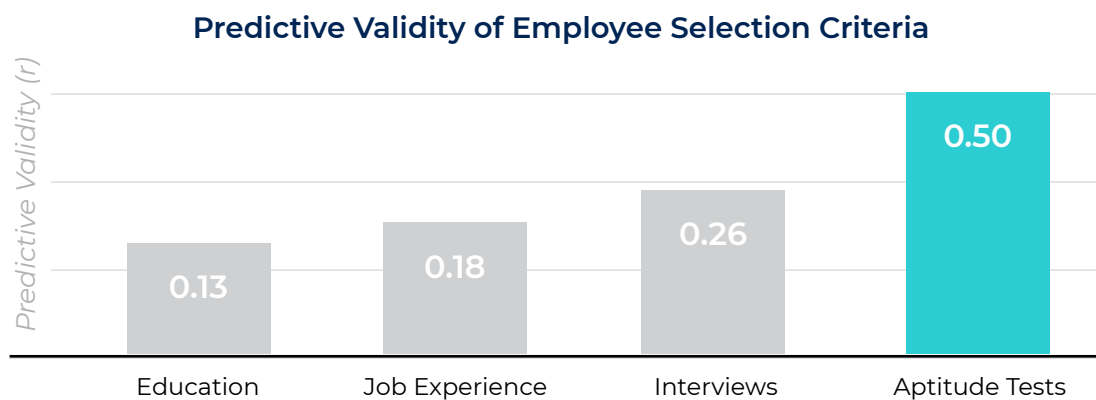


**Skills**

### APTITUDE TESTS

**Aptitude tests** measure critical thinking, problem solving, and the ability to learn, digest and apply new information. In essence, cognitive aptitude tests seek to assess an applicant's general intelligence or brainpower. According to a [study](#) conducted by LinkedIn, the two most important qualities employers seek are problem solving skills (65%) and the ability to learn new concepts (64%). These abilities are difficult to assess based solely on resumes and interviews, and that is where aptitude tests can help. Aptitude tests can be used in almost any occupational context, but they are especially useful for mid- and higher-level jobs. Because they test the abilities that are most essential to job performance in a wide variety of fields, it's no surprise that aptitude is the single most accurate predictor of job performance.

In fact, research demonstrates that cognitive aptitude tests are far better at predicting job performance than other common hiring criteria – aptitude tests are twice as predictive as job interviews, three times as predictive as experience, and four times as predictive as education level (Figure 1).



**FIGURE 1:** When it comes to predicting job performance, aptitude tests are twice as predictive as job interviews, three times as predictive as job experience, and four times as predictive as education level.



## PERSONALITY TESTS

Personality tests are becoming increasingly popular among HR professionals, yet there are still quite a few misconceptions about what personality tests are and how they should be used.

Personality tests seek to answer the questions: Will the candidate be comfortable in this role? Does the candidate have the behavioral traits that are linked to success in this position? Unlike with aptitude tests, there are no right or wrong answers on personality tests. Instead, these tests measure the extent to which people possess relatively permanent behavioral traits. Measuring these traits can help employers predict job fit by determining if a candidate's behavioral tendencies are a good match for both the position and the company culture.

Personality tests can measure many different traits, but the most prominent personality test framework uses what is called the "Big Five" or "Five Factor Model." These are the five dimensions of personality that consistently emerge in empirical research: Agreeableness, Conscientiousness, Extroversion, Openness (to Experience), and Stress Tolerance. The concept of personality "traits" is now fairly widely accepted, and is superseding an older paradigm of personality "types" that originated with Carl Jung and relied on a view of personality that categorized people into one of two distinct types, such as introvert or extrovert, thinker or feeler, Type A or Type B. The traits model is gaining credence in personality research because of growing evidence suggesting that a strict dichotomy between two distinct types does not sufficiently describe the nuances of human personality.

### Personality Types



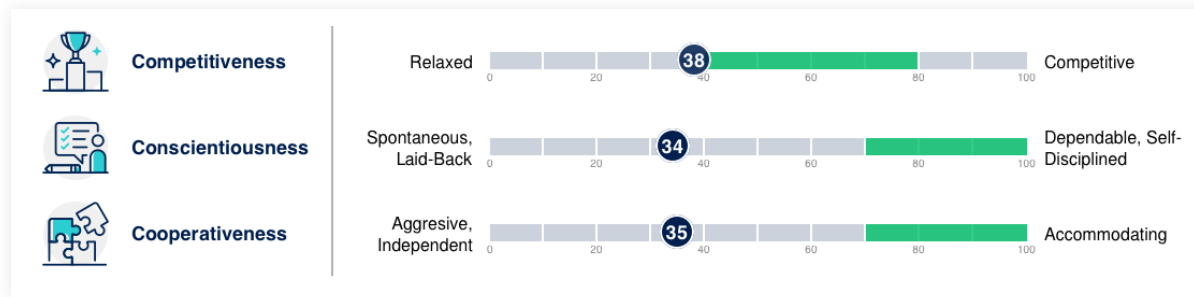
### Personality Traits



**FIGURE 2:** The traits model is gaining credence in personality research because of growing evidence suggesting that a strict dichotomy between two distinct types does not sufficiently describe the nuances of human personality.



The Big Five traits are especially applicable to the hiring process because substantial evidence links these traits to job performance for a variety of positions. Conscientiousness, which measures the extent to which an individual is reliable, organized, persistent, and responsible (those who score low in Conscientiousness may be more impulsive and at times unreliable) has been shown to be moderately predictive of success across many job types, but particularly for entry-level positions where characteristics like reliability and punctuality may be more valuable than creativity (Figure 3).



**FIGURE 3:** In this example from a personality test, each trait is scored across a spectrum. The green bars represent the ideal score ranges for a particular position.

Research demonstrates that certain personality traits are particularly predictive of job performance for two types of positions – **sales** and **customer service** jobs. Generally, the highest performing salespeople across a wide range of industries tend to be competitive, highly motivated, outgoing, and assertive. Alternatively, successful salespeople scored lower for traits such as cooperativeness and patience.

Tests that assess traits related to customer service are also increasingly popular because customer service representative positions tend to have above average turnover rates. This leaves HR managers scrambling for tools that can help remedy this problem. Personality tests are particularly useful for minimizing voluntary turnover because they seek to uncover not whether candidates are capable of doing a job, but whether candidates will be content and comfortable performing that job based on their fixed personality traits.

Customer service personality tests are not strictly reserved for customer service representatives, however. These types of tests have been growing in popularity because many organizations place a heavy emphasis on cultivating a “culture of customer service” across an entire organization, in industries as diverse as medical care providers, banks, and non-profits. Companies may find a lot of value in administering these tests to applicants for managerial and administrative positions if their jobs will involve frequent interactions with customers or the public at large.



## EMOTIONAL INTELLIGENCE TESTS

Emotional intelligence tests are a newly emerging category of assessments. The concept of emotional intelligence, or EI, is relatively new, first popularized in the 1990s. Over time, the concept of emotional intelligence has become particularly important in the context of the workplace.

Research has shown that emotional intelligence is associated with important work outcomes such as interpersonal effectiveness, collaboration and teamwork, motivation, and decision-making. Strong emotional intelligence has also been associated with good leadership and strong management skills. As a result, organizations are increasingly interested in assessing EI in the hiring process.

Emotional intelligence as a construct is less well-established when compared to cognitive aptitude or even personality. However, research has suggested that emotional intelligence can be viewed as an ability akin to cognitive ability. This makes it possible to assess EI using an ability-based assessment. **Emotify**, for example, is an ability-based assessment of emotional intelligence that measures a person's ability to accurately perceive and understand emotions.

In terms of when to use an emotional intelligence test in the hiring process, Criteria recommends administering it for roles that require a great deal of interpersonal interaction. Examples include management or leadership roles, sales or customer services, human resources, and more.

## RISK TESTS

Risk tests essentially help organizations reduce risk. Risk can take a wide variety of forms, and different assessments measure different types of risk. The main benefit of a risk assessment is that it helps organizations reduce the risk that employees may engage in unsafe or counterproductive work behaviors.

One common type of risk assessment is what is called an **Integrity or Honesty test**. These assessments help employers manage risk by assessing the likelihood that an applicant will be a reliable employee who will follow the rules. Most integrity tests focus on an applicant's tendencies and attitudes relating to rule adherence. These tests can be used to predict behavior with respect to a wide variety of counterproductive work behaviors (CWBs) that employers want to avoid, including tardiness, absenteeism, time-wasting, theft, fraud, drug use, and safety violations.





Integrity tests are most widely used and are most effective for entry-level positions for which overall reliability and rule-following is particularly important. Integrity tests are most commonly used:

- ✓ To reduce risk of employee theft in retail sales
- ✓ In positions where employees will be working in customers' homes, such as home health care aides and field service technicians
- ✓ In manufacturing settings to assess risk for safety violations

In all of these cases, integrity tests serve as a risk management measure by determining which applicants represent a higher risk of engaging in these behaviors based on their responses and personality profiles. Employers often use background checks during the hiring process to mitigate risk, but background checks can be expensive and only target people who have a past record of committing crimes. Integrity tests, on the other hand, will help reduce risk with regard to a host of unproductive behaviors that, while not necessarily as serious as felonies, are generally undesirable. By using integrity tests early in the hiring process, employers can save time and costs while still minimizing risk by screening out applicants that might exhibit workplace behaviors that can damage their organizations.

Another type of risk assessment is a safety assessment. Safety assessments measure a candidate's attitudes towards safety and the likelihood that they will engage in risk-taking behavior. These types of assessments can help organizations reduce safety incidents and the high costs associated with them. Safety assessments also help to promote a strong "safety culture" where individuals contribute positively to a safe workplace.

Safety assessments are used across a wide range of industries, such as construction, manufacturing, mining, oil and gas, and transportation and logistics. Scientifically validated assessments help organizations significantly reduce the number of workplace incidents and injuries that occur, leading to cost savings from property damage and compensation claims.





## SKILLS TESTS

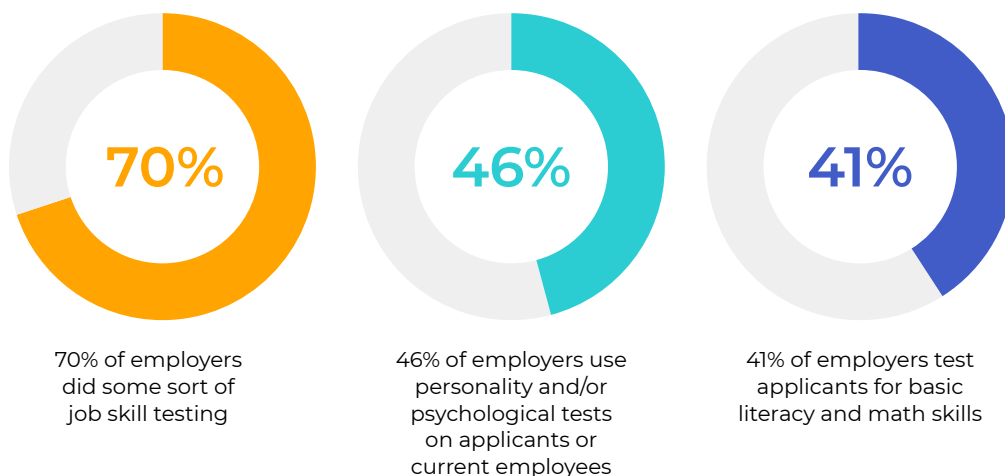
**Skills tests** measure job-related competencies; broad ones like verbal, math, and communication skills, or narrow ones like typing and computer skills. These are skills that candidates have picked up through their education and career histories – these skills do not necessarily reflect basic aptitude but instead reflect acquired knowledge – what the applicant already knows how to do based on previous experience.

General skills tests (for example, the **Criteria Basic Skills Test**) that measure overall job readiness skills such as literacy, numeracy, and attention to detail, can be effective predictors of job performance for a wide variety of entry-level positions. Many skills tests, however, measure more specific acquired competencies such as typing speed or knowledge of specific software applications. It is important to realize that such “micro-skills” tests are not designed to predict long-term job performance, as most aptitude and personality tests are; rather, they are intended only as an indicator of a person’s current skill level in key job-related competencies.

To maximize the effectiveness of pre-employment testing, one useful strategy is to use more than one type of test. For example, it’s very common to test aptitude and personality, or skills and personality. Using more than one test for each candidate allows employers to assess more than one relevant aspect of an applicant, providing more objective, reliable data to streamline the hiring process and make more informed decisions.

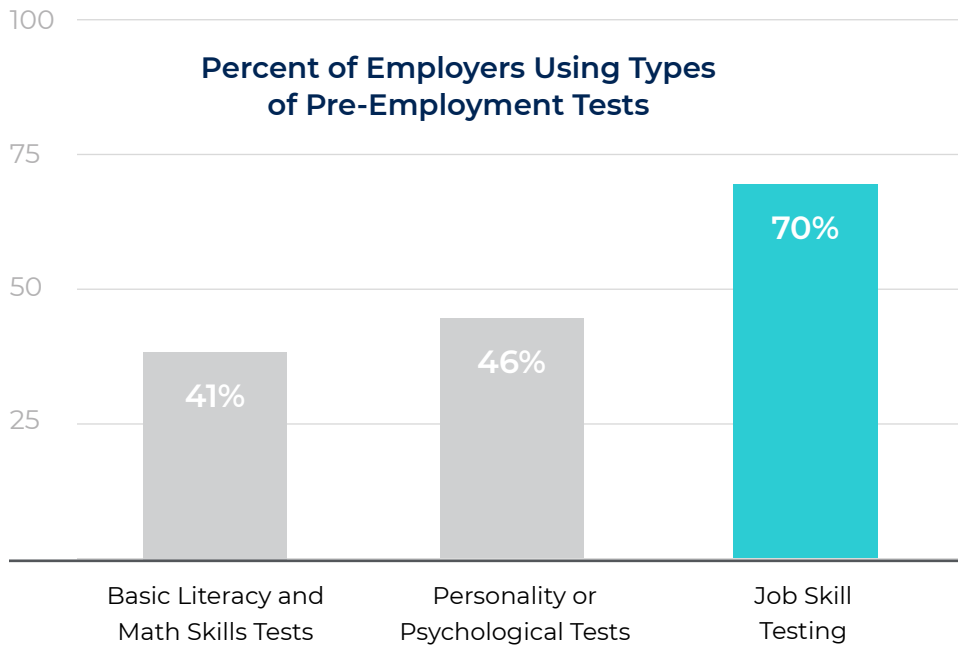
## How Common is Pre-Employment Testing?

The use of pre-employment testing has grown dramatically in recent years. With applicant pools on the rise due to the ease of applying online, hiring managers and recruiters are starting to rely more on data-driven talent management practices that streamline the hiring process. According to surveys done by the American Management Association (AMA), the use of pre-employment testing has been growing steadily in the past 15 years (Figure 4). The AMA’s data revealed that:





The AMA's data are based on surveys of its membership, which tends to be made up of larger organizations. Criteria Corp believes small- and medium-sized businesses should also be able to enjoy the benefits of using pre-employment tests, and our mission is to make these assessments accessible to organizations of all sizes.



**FIGURE 4:** According to surveys conducted by the American Management Association (AMA), 70% of employers do some sort of job skill testing, 46% of employers use personality and/or psychological tests on applicants or current employees, and 41% of employers test applicants for basic literacy and math skills.



## What to Expect from Pre-Employment Testing

What kinds of results should companies expect from using pre-employment tests? It is important to have realistic goals and expectations for what a pre-employment testing program can achieve for an organization. By using professionally-developed, validated testing instruments, employers are adding objective, data-driven metrics to the hiring process. Using tests should drive incremental improvements in the hiring results, and minimize the risk of bad hires. It should also dramatically streamline the hiring process, and translate into demonstrable improvements in a business by reducing turnover, lowering hiring and training costs, and improving productivity. This streamlining process should result in tangible gains – using an [ROI Calculator](#) can help demonstrate the returns a company can expect after implementing testing.

However, it is equally important to be realistic and understand what not to expect from pre-employment testing. Tests are not a crystal ball, and anyone who claims otherwise is not being honest. When some testing companies advertise “99.9% accuracy” or claim that employers who use their tests will “Never make a bad hire again,” they are either ignorant of how the science behind testing works, or are misrepresenting it to sell their tests. Incorporating tests into the hiring process does not mean employers will never make another bad hire, only that they will make fewer of them. No test is a perfect predictor. Some people who don’t test well may be exemplary employees, and some that test well may be terrible employees. While research does indicate that tests are significantly more accurate and reliable as predictors than resumes or interviews, employers must remain aware that there is no single selection methodology that will be 100% accurate in predicting performance.

As a result, pre-employment tests should only be one element within a comprehensive set of criteria used to evaluate applicants, including resumes, interviews, job experience, education, and anything else that is relevant for a position. Pre-employment tests provide the most value when applied at the top of the hiring process to screen out candidates who aren’t a good fit. Ultimately, however, organizations that use tests are making their final decisions based on many factors, of which tests should be one important component. Companies should expect tests to streamline and improve the hiring process, not replace it.



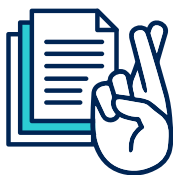
# The Benefits of Using Pre-Employment Testing

## Why Do Companies Use Pre-Employment Tests?

Throughout any hiring process, employers necessarily aim to gather as much relevant information on their candidates as possible. The problem is that traditional methods of getting to know candidates – resumes and interviews – often don't yield the best insight. Resumes are notoriously unreliable – [research](#) indicates that up to 78% of resumes contain misleading statements, while 46% contain actual lies. Similarly, interviews – especially unstructured ones – are subjective and ultimately serve as poor predictors of job performance.

In contrast, properly developed and well-validated tests are a reliable and objective means of gathering job-related information on candidates. Pre-employment tests introduce an element of objectivity into the hiring process by providing concrete results that can be standardized across all applicants. Employers can then use these data to make better informed, more defensible hiring decisions.

Even more importantly, companies that use pre-employment testing can experience tangible positive impacts in their business. The two most common hiring-related pain points for HR professionals and business owners alike are that organizations are spending way more time than they'd like on hiring, and yet despite this, they are still making more hiring mistakes than they can afford. Pre-employment tests can help directly with both of these concerns: by dramatically reducing the time spent reading resumes and conducting interviews, pre-employment tests will help reduce the time and costs associated with hiring. And by providing reliable, objective data that predict job performance, tests should increase the quality of hire and reduce the number of bad hires. Ultimately, this will lead to bottom line improvements like increased workforce productivity and reduced turnover.



### Research shows that resumes are notoriously unreliable

**78%**

Resumes that contain misleading statements

**46%**

Resumes that contain actual lies



## The Main Benefits of Pre-Employment Testing

Pre-employment tests offer wide-ranging benefits that not only streamline the hiring process, but also strengthen an entire organization by increasing the likelihood that new employees will be successful in their positions. Pre-employment testing can help ensure alignment between the employee selection process and desired business outcomes such as lower turnover, increased sales, and higher customer satisfaction. The most significant benefits a company may experience by implementing an effective employee testing solution include:

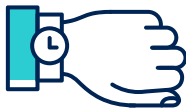


### Higher productivity



### Increased employee retention

and reduction in costs associated with turnover (e.g., hiring and training costs)



### More efficient, less time-consuming hiring process



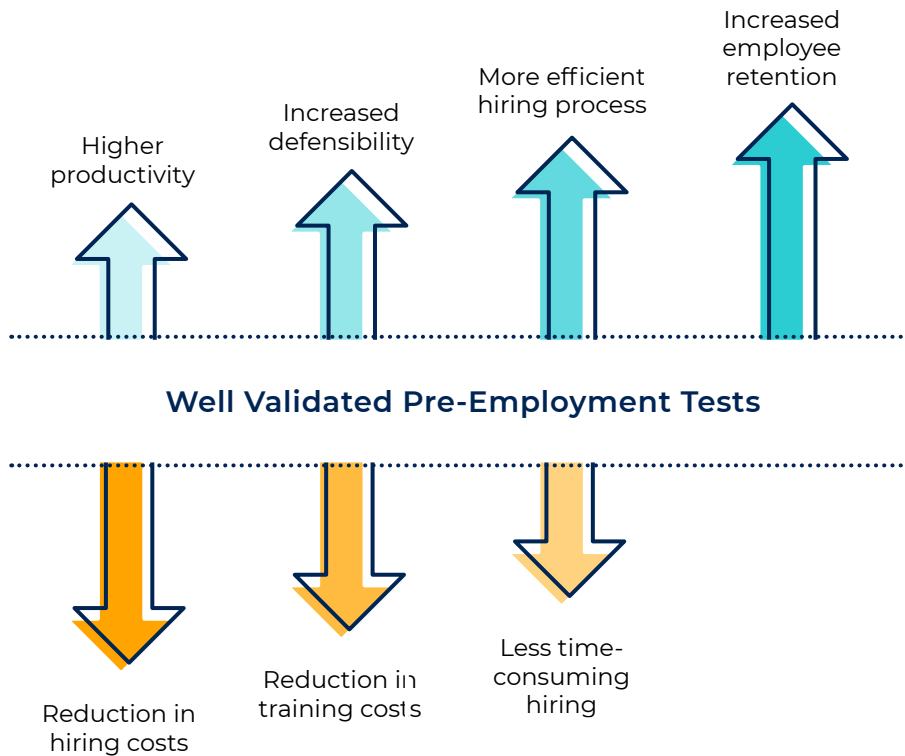
### Increased defensibility of the hiring process

through the use of objective, validated metrics



## HIGHER PRODUCTIVITY

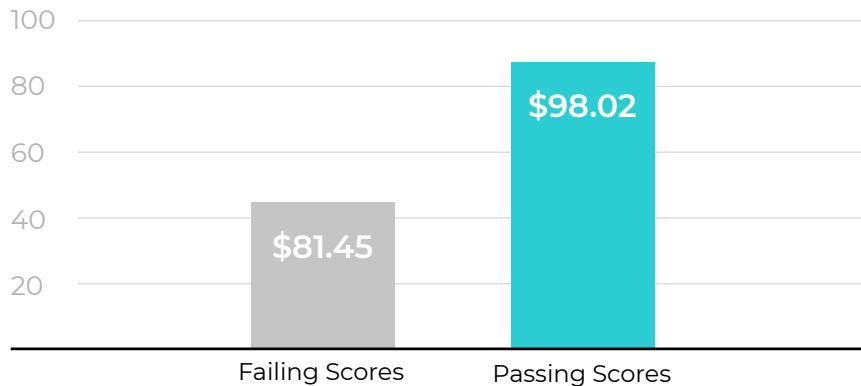
Research demonstrates that professionally developed, well-validated pre-employment tests can successfully predict employee productivity across a wide range of job types and industries. Tests are among the most accurate means of predicting performance because they can objectively determine the extent to which a candidate has the knowledge, skills, and abilities to perform well at any given job.



Consider the case of a **clothing retailer** that sought to improve the productivity (as measured by hourly sales volume) of its sales associates. They gave their current employees the **Criteria Basic Skills Test (CBST)**, which measures basic math, verbal, and communication skills, as well as attention to detail. By examining the relationship between test scores and average sales per hour, the company was able to determine that employees who achieved high scores on the test sold, on average, \$98.02 of goods per hour, while those who received low test scores sold only \$81.45 per hour (Figure 5). In other words, those salespeople who passed the test were on average 20% more productive than those who didn't. When correlations between test results and various desirable business outcomes – including productivity, retention rates, customer satisfaction ratings, and training expenses - can be linked to each other in a data-driven way, it is relatively simple to demonstrate the dramatic Return on Investment (ROI) of employee testing.



## Average Sales Per Hour By CBST Score



**Figure 5:** Employees who achieved high scores on the CBST sold, on average, \$98.02 of goods per hours, compared to \$81.45 for those that received low scores.

## INCREASED EMPLOYEE RETENTION AND REDUCTION IN COSTS ASSOCIATED WITH TURNOVER

Pre-employment testing can increase employee retention by ensuring that new employees have the basic aptitude required for the job along with the appropriate temperament, or personality, to feel comfortable with the type of work required of them. These factors may reduce the likelihood of employees being let go for performing poorly or not successfully completing training (involuntary turnover) as well as the likelihood that employees will quit of their own accord (voluntary turnover).

One example demonstrating the value of pre-employment tests as a means of reducing turnover is provided by the case of a [call center](#) in the financial services industry. Like many call centers, employee retention represented a significant business challenge, so the company decided to administer the Criteria Basic Skills Test to all new hires and then analyze the relationship between test scores and retention rates after six months. What they found was that the employees with higher test scores were both less likely to be fired and less likely to quit. The 6-month retention rate for low scoring employees was 56%, while the rate for high scoring employees was 67%.

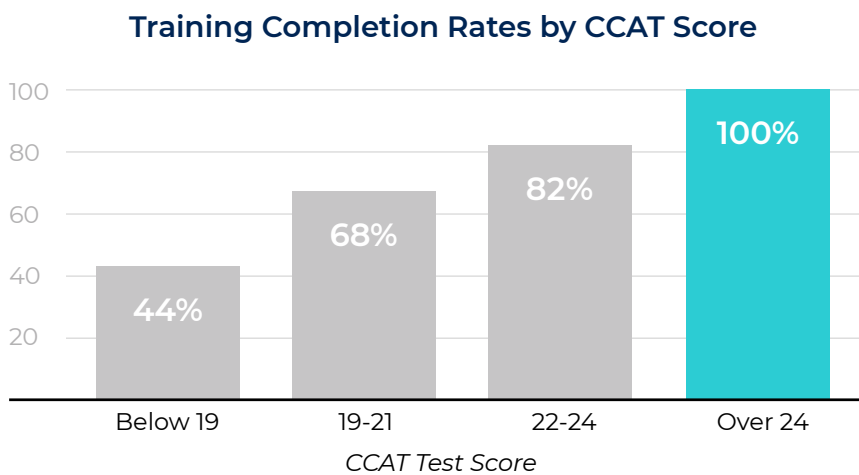
Reducing turnover can have wide-ranging benefits that ripple through an entire organization. Lower turnover rates boost employee morale and elevate a company's reputation externally, which in turn makes it easier for a company to attract and hire better quality candidates. Reducing turnover also leads to more concrete benefits to a company's bottom line. Some of the expenses associated with replacing an employee include recruitment, selection, training, and occasionally severance pay for the departing employee. One [study](#) estimates that replacing entry level employees costs about 16% of their annual salary, and this number increases even more for higher-paid positions – to replace mid-level employees, it costs about 20% of their annual salary, and to replace high-level executive employees, it could cost over 200%. As a result, there is clear incentive for companies to find ways to reduce turnover in their employees.





One national consumer lending company wanted to improve the quality of the employees they hire in order to reduce hiring and training costs. New employees were required to complete a rigorous 3-4 week training course followed by a federally mandated licensing exam. Due to the complexity of the training, a substantial number of new hires were not passing the course required to become hired as long-term employees. The company decided to administer an aptitude test to an incoming group of new hires to determine if the test could predict performance during the training period.

What they found was a very strong correlation between test scores and successful completion of training. Of those who scored in the highest tier, 100% completed their training and passed the licensing test. The success rates declined steeply for groups of new hires with lower scores (Figure 6).



**FIGURE 6:** One finance company administered the CCAT aptitude test to a group of incoming trainees and compared their test scores to their training completion rates. Of the group that scored above average on the CCAT, 100% completed training. Completion rates decreased for groups that scored lower on the aptitude test.

Implementing aptitude tests for a position at this level is especially worthwhile due to the cost and time commitments required for training new hires. Because aptitude is such a consistent indicator of future performance, implementing this kind of test early can drastically reduce the costs associated with turnover by limiting the amount spent on hiring and training employees that may be ill-equipped for the position.



## MORE EFFICIENT, LESS TIME-CONSUMING HIRING PROCESS

The recruiting process can be incredibly time-consuming – it typically takes about **45 days** to fill a new position. However, for **jobs that are posted online**, nearly 50% remain open for more than 90 days. This is not due to a lack of applicants – an average of 250 resumes are submitted for each online posting, and our own data suggests that the average size of applicant pools for each open position more than doubled in recent years. Rapidly growing applicant pools are making it increasingly difficult for recruiters to manage applicant flow and identify the right candidates within a sea of resumes. Including pre-employment tests in the hiring process can dramatically streamline this process.

Pre-employment tests offer the most time-saving value when administered at the top of the hiring funnel. By requiring that applicants take the tests early on, companies can weed out a lot of the “resume spammers” who send out their resumes with minimal thought or effort. The applicants who end up completing the tests are, at the very least, serious enough about the position to put in the time to take the tests.

Moreover, setting minimum cutoff scores for certain tests can quickly narrow down the number of applicants to select for phone or in-person interviews. Reducing the time spent on the interview process drastically reduces the overall time spent recruiting employees - **research** indicates that the average recruiter spends nearly 63% of his or her time on the phone per week. Meanwhile, **in-person interviews** last an average of 40 minutes. Pre-employment tests limit the hours spent on time-consuming recruiting activities by making it easier to discover the right candidates with the most potential for success on the job.



### The cost to replace an employee, as a percentage of annual salary:

**16%**

Entry-Level

**46%**

Mid-level

**200%**

High-level



## INCREASED DEFENSIBILITY IN THE HIRING PROCESS

Besides helping a company realize improvements in various business outcomes, pre-employment testing can also enhance the objectivity, equitability, and legal defensibility of an organization's hiring process. All companies should strive to utilize equitable and legally compliant employee selection and promotion practices. Pre-employment tests are governed by federal guidelines intended to ensure equitable and non-discriminatory hiring practices. Because of this, some companies believe that utilizing employment tests increases a company's legal exposure. However, the same guidelines that govern pre-employment testing govern all selection methodologies used by employers. While employers should be aware of the legal compliance issues surrounding employment testing, it is important to realize that employment testing can actually augment legal defensibility by enhancing the objectivity of a company's employee selection procedures. Organizations that implement testing programs in accordance with legal guidelines are therefore better prepared to defend these procedures in the unlikely event that a legal challenge to their hiring practices should ever arise.



# Validity of Pre-Employment Testing

Most professionally developed pre-employment tests are also well-validated. But what does it mean to say a testing program has validity? Many customers who are new to pre-employment testing imagine that “valid” tests have received some sort of seal of approval verifying that they passed certain standardized qualifications for validity. This is not the case. Instead, establishing a test’s validity – the process of test validation – involves gathering different pieces of evidence to provide a scientific basis for interpreting the test scores in a particular way. A pre-employment test has predictive validity if there is a demonstrable relationship between test results and job performance.

## Types of Validity Measures

There are a number of different types of validity measures that are used to validate pre-employment tests. The most important types of validity-supporting evidence include construct validity, content validity, and criterion validity.

### CONSTRUCT VALIDITY

A pre-employment test has construct validity if it measures what it is supposed to measure. In other words, construct validity refers to the extent to which a test correlates with a theoretical scientific construct such as general intelligence, mechanical aptitude, or extraversion. For example, a cognitive aptitude test is expected to measure cognitive aptitude, or generalized intelligence. If it fails to accurately measure intelligence, it is ineffective. The process for determining construct validity for an aptitude test might involve comparing the test with other leading measures of cognitive aptitude to see if the two measures are highly correlated.



## CONTENT VALIDITY

Content validity measures how well the subject matter of a test relates to the capabilities and skills required by a certain job. Establishing a test's content validity involves demonstrating that test items reflect the knowledge or skills required for a particular position. Ensuring that a pre-employment test has content validity is necessary for affirming that the test follows the rule of job-relatedness. According to the [UGESP](#) and the [Equal Employment Opportunity Commission \(EEOC\)](#), pre-employment tests administered to job applicants must be related to the position for which they are administered. For example, administering a sales personality test to a computer programmer does not qualify as job-related if the position does not involve interacting with or selling to potential customers. Establishing content validity protects companies from the unlikely event of a lawsuit by ensuring that tests are used in a legally compliant way.

## CRITERION VALIDITY

Ultimately, the most powerful way that a company can demonstrate the validity of its testing program is to establish criterion validity. Criterion validity (also called concrete validity because it refers to a test's correlation with concrete outcomes) refers to the relationship between two variables, in this case between test scores and a desired business metric. Typically, the business metric would be a measure of employee performance (e.g., supervisor's performance ratings or average sales per hour) or organization-wide business outcomes (such as employee retention rates). The relationship between test performance and job performance can be quantified by a correlation coefficient (ranging from -1.0 to +1.0) which serves as a measure of the extent to which test scores predict future job performance. Criterion validity is more difficult to measure than other types of validity because it requires large sample sizes for each position.

Organizational psychologists speak of two types of criterion validity: concurrent validity and predictive validity. Concurrent validity is determined by comparing tests scores of current employees to a measure of their job performance. For example, a company could administer a cognitive aptitude test to its employees to see if there is an overall correlation between their test scores and a measure of their productivity.

Predictive validity, however, is determined by seeing how likely it is for the test scores of applicants to predict their future job performance. If an employer's selection testing program is truly job-related, it follows that the results of its selection tests should accurately predict job performance. In other words, there should be a positive correlation between test scores and job performance.



# The Test Validation Journey

Here's an example of how one test (Test A) goes through a three tiered validation process.

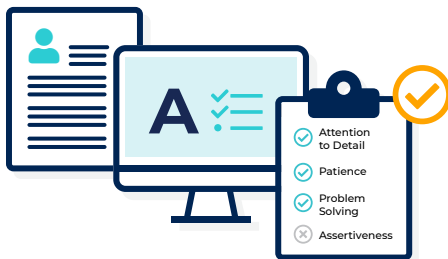


## Test Comparison

### | Construct Validity

A sample group takes two tests: Test A and Test B (an established test that measures what Test A is trying to measure). Next, a correlation is found between the individuals' scores on Test A and Test B.

A high correlation between the two scores means that Test A is measuring what it is supposed to be measuring, otherwise called Construct Validity.



## Job-related Qualities

### | Content Validity

Content validity is how employers determine whether the test is measuring qualities that are job-related for the position. This can be done by drawing up a basic job description and making sure that the qualities being measured in the test are, at face value, related to success in the role.



## Business Outcomes

### | Criterion Validity

Test A is given to a large group of employees, and a correlation is found between their test scores and the performance ratings assigned to them by a manager. A high correlation between test scores and performance ratings\* means that the test is predictive of performance.

\*Performance ratings are one of many business outcomes that can be used to assess criterion validity.



## Validity Generalization

A substantial body of research has concluded that for certain types of tests, especially tests of cognitive aptitude, validity evidence can be generalized across a broad range of jobs. Using meta-analysis and other statistical techniques, industrial-organizational psychologists have concluded that in many cases, the validity of tests as predictive tools “can be generalized from one employment setting to another without need for a local validation study” because the “validity of cognitive ability testing is not situation-specific...because cognitive ability is universally relevant to and useful in predicting job performance”.\* This practice of “validity generalization” means that employers may also choose to rely on “transportable validity” from test publishers who have demonstrated the validity of a specific instrument in a wide variety of employment settings, meaning that employers would not need to produce a local validity study of their own. Transportable validity is the evidence a testing provider has collected by using a test for various jobs at different companies. Smaller companies that don’t have large enough sample sizes for local validity studies may want to rely on the transportable validity that the testing company can provide owing to their large-scale sample sizes.

*\*Testimony of expert witness Kenneth Willner at EEOC meeting of May 16, 2007.*





# Best Practices for Implementation

Once an employer decides to integrate pre-employment testing into the hiring process, how can he or she get the most out of it? The following best practices and tactical strategies will allow employers to streamline the recruiting process and make smarter hiring decisions with greater efficiency. We will address such frequently asked questions as:

- ✓ How should employers choose which pre-employment tests to administer?
- ✓ When should tests be used?
- ✓ How much pre-employment testing is appropriate?
- ✓ What scores should employers expect from their applicants?

## Test Selection: Choosing Which Tests to Administer

Test selection is the first and probably most important step in implementing a pre-employment testing program because it is critical that organizations use tests that measure job-related abilities and skills. The key to ensuring any selection procedure is valid and effective is the so-called rule of “job-relatedness,” and tests are no exception: pre-hire tests must measure skills, abilities, and traits that are relevant to the job in question. Inappropriate test selection will result in an ineffective selection methodology, and can also result in a testing program that is not legally compliant.

This is why a common best practice in employment testing is to conduct a Job Requirements Analysis for a position before using tests to screen candidates. Once a company has created a job profile by describing the skills, work activities, and abilities that are associated with a given position, it is much easier to determine which tests will be the most relevant. Investigate what types of tests make the most sense for specific types of positions [here](#).



Certain types of tests that measure general capabilities - such as critical thinking, problem solving, and learning ability - are likely to be “job-relevant” for many different positions because they test traits that are valuable for nearly every job type. Other tests designed specifically for certain positions, such as a [sales personality test](#) - should never be used for positions for which they were not specifically designed.

Finally, since most organizations hire for a variety of positions with widely varying job requirements, it is generally advisable to choose different testing protocols for each position. There will often be common elements to the test batteries for many positions - for example it may be appropriate to use a general aptitude test for many different positions, as explained above - but in general, the best way to ensure adherence to the rule of job-relatedness is to make test selection decisions on a position-by-position basis.

## When to Use Tests

Once an organization has chosen which tests to use for a given position, it will need to decide at what stage of the hiring process to test applicants. There may be many factors that go into this decision, but it is generally recommended to test applicants as early as possible. Using tests early in the hiring process is an efficient and reliable way to gather objective data on candidates before deciding which candidates should move on to the next step in the process (Figure 7).

## Where to Test in Your Hiring Funnel



**FIGURE 7:** Using tests early in the hiring process is an efficient and reliable way to gather objective data on candidates before deciding which candidates should move on to the next step in the process.



Requiring applicants to take tests through a link included in a job board posting, for example, will help employers filter through large applicant pools, and ensure that everyone who is moving through the hiring funnel meets the basic standards for the job. This helps streamline the hiring process, saving a great deal of time that would have been spent reading resumes from unqualified applicants.

Administering tests at the beginning of the hiring process often means that candidates will take these pre-employment assessments remotely. However, many companies have initial reservations about [remote testing](#). How can an organization be sure that the candidate is the one who is actually taking the tests? With unproctored testing, it's difficult to be sure someone isn't getting outside help. That's why Criteria Corp recommends that for aptitude and skills tests, employers confirm the offsite results by administering different versions of the tests in person to applicants who passed the initial screening. To get the most out of onsite testing, one useful strategy is to tell candidates ahead of time that they will be retested on site – that way, they know they'll be wasting their time if they don't take the remote tests honestly.

In general, remote testing is increasingly becoming the norm because the benefits of upfront testing far outweigh the negatives. One reason is that cheating may actually be less common than expected. Criteria Corp conducted a study with one of its largest customers who administers aptitude tests remotely at the front end of their hiring process, and then retests a select number of candidates later onsite. When comparing the candidates' remote test scores with their onsite test scores, the percentage of people who didn't take the test honestly offsite (i.e., without outside help) was actually quite small, much less than 2% of the applicant pool. This may be because the company explicitly describes its retesting policy when they send candidates the invitation to take the test. Being explicit about retesting eliminates the incentive to cheat, because applicants will only be wasting their own time if they take the test dishonestly.

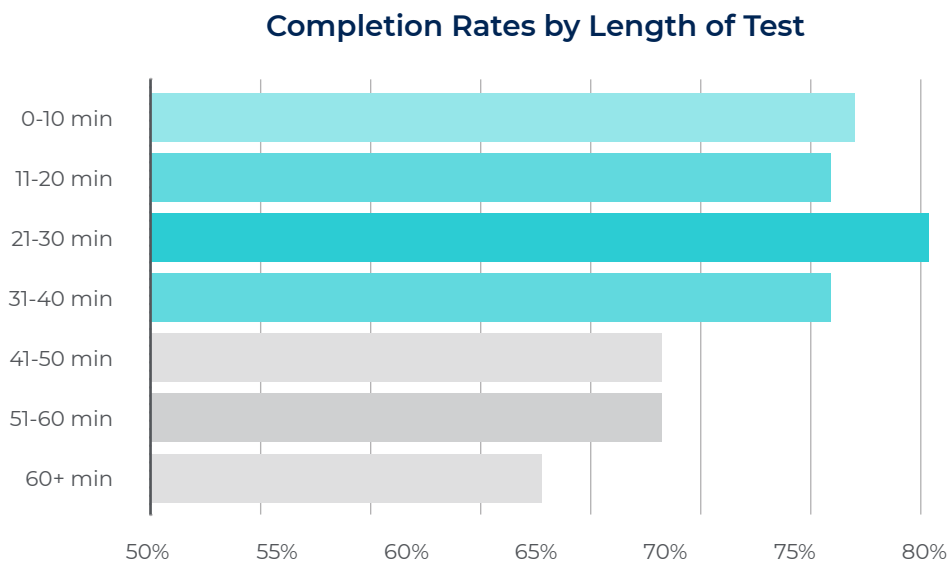
A second reason some companies hesitate to use tests early in their hiring process is cost. When companies link to a test from a job posting, they will likely get a huge number of applicants taking the tests. If a testing service requires companies to pay per test, costs will mount quickly. Therefore, if an organization does decide to administer tests remotely, it is best to choose a provider that has a flat rate, unlimited use pricing model.



## How Much Testing is Appropriate?

After narrowing down the types of tests that are relevant for a position, and determining at which stage of the hiring process tests will be administered, the next step is deciding how many tests to administer. In order to attract the best talent, companies should be sensitive to how candidates might perceive them. Because it is recommended to test early in the hiring process, it's important to consider how much testing is appropriate when these tests will serve as one of the first points of contact a candidate may have with an organization. But how much testing is too much?

Criteria Corp analyzed a huge volume of data (about half a million tests) to help answer this question. As the graph below makes clear, candidates complete tests much less frequently when the length of the test exceeds 40 minutes (Figure 8).



**FIGURE 8:** Above 40 minutes, the completion rates for tests decrease dramatically.

Meanwhile, the completion rates for test batteries of less than 40 minutes in length always exceed 75%. If this seems low, consider that many candidates encounter the test through a link in a job posting, and may simply close the test window after deciding they don't have the time, ability, or inclination to take the tests. Candidates who won't spend the extra time taking the tests are probably less serious about the position in the first place, and filtering them out at this stage is generally an asset for overburdened HR departments, unless their applicant-to-hire ratio is very low. Interestingly, this 75%+ completion rate is no different for a very short (less than ten minute) test than it is for a 30-40 minute test.



However, in cases where candidates are asked to take a test battery that is longer than 40 minutes, the completion rates are significantly lower: 66% for 41-60 minute tests, and 60% for tests lasting longer than an hour. It seems that the point at which “test fatigue” begins to discourage candidates can be pinpointed: it’s after 40 minutes. Therefore, it is recommended that companies keep test batteries under 40 minutes whenever possible. This is especially true for remote testing done early in the hiring process, when candidates are less sure of how likely their efforts will pay off.

For example, if an employer wanted to hire an **administrative assistant**, he or she might consider administering a test battery that includes a 20-minute **basic skills test** and a 15-minute **personality assessment**. Using these two tests in tandem would capture a lot of relevant information about each candidate while keeping the overall test time under 40 minutes. If more testing is needed, employers may want to wait until a later point in the process and administer a second round of tests to the remaining candidates. Limiting test duration to 40 minutes or under reduces the number of candidates who drop out of the application process due to overly burdensome testing requirements.

## Testing Existing Employees

When implementing a pre-employment testing program, how does a company determine the appropriate scores to look for in the ideal employee? Most testing providers will be able to provide suggested score ranges for the most commonly tested positions based on large data samples they have gathered and analyzed. This can provide valuable context, especially in the earliest stages of implementing pre-employment testing at an organization. If possible, companies should consider administering the tests to their existing employees in similar positions and then using their scores to create benchmarks for their applicants, thereby tailoring target scores to the current standards of the organization. This benchmarking approach is unlikely to help small companies where the numbers of incumbents in a given position are too small to yield significant results. For example, benchmarking will not be meaningful if a company has only 4 customer service representatives; in this type of case, it may be more efficient to rely on the data and insights from the testing provider.

Whenever practical, however, administering tests to existing employees for benchmarking purposes can yield valuable insights. For example, imagine a company is hiring **medical assistants** for a hospital. Medical assistants are responsible for performing basic administrative duties as well as interacting with patients and other medical staff. The company selects a **basic skills test** to assess verbal skills, math skills, and attention to detail. It also selects a **personality test** to determine if the candidates would work well with patients. To determine the scores it should be looking for in its applicants, the company administers both tests to the medical assistants currently working in the hospital. From there, the company’s testing provider would be able to assist with interpreting the data and setting appropriate suggested score ranges based on the gathered data.



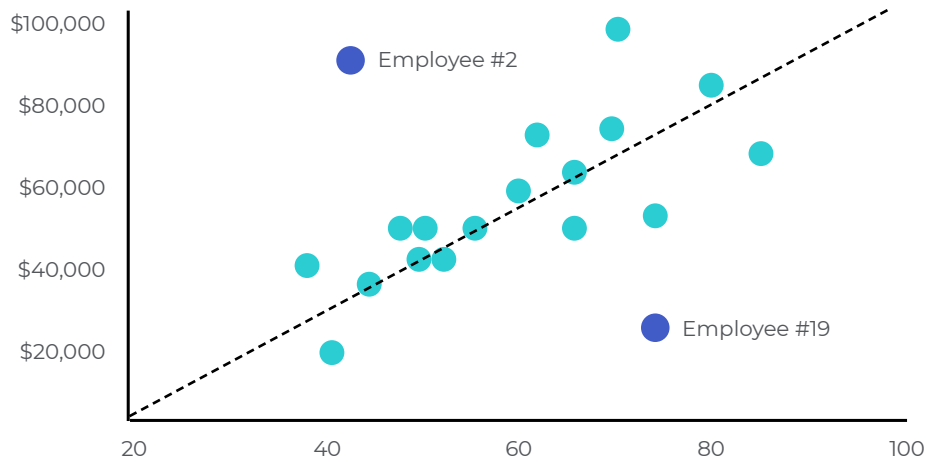
One common misconception about “benchmarking” is that companies should only administer tests to their best performers and then replicate their success by hiring people with similar profiles. There are two potential problems with this. First, if only the star performers are tested, employers can’t be sure that the test results they achieve are actually any different from the test scores that the rest of the employee base would receive; that is, they can’t be sure that there is any correlation between test scores and job performance for their population. Second, if companies insist on minimum scores that exactly match those of their top performers, they run the risk of being too restrictive with their applicant pool. To avoid this problem, it is advisable to test a wide sample of incumbent employees when benchmarking.

Another benefit of testing a sample of incumbents is that in doing so, companies are conducting what is known as a “local validity” study that should confirm and quantify the correlation between test results and job performance. Again, the testing provider should be able to offer insights on how best to do this. The goal is to demonstrate that the test is a valid predictor of performance for that particular organization and for the specific position for which the tests are being used. When performing local validity studies, it is especially important to examine the data as a whole, and to do so in a statistically rigorous way.

Occasionally, testing existing employees might lead to some unanticipated results. For example, a company might test its employees and realize that **one of its top performers failed the exam**. This is not cause for alarm. Top-performing employees DO occasionally fail tests, which is perfectly understandable considering that no single test is a perfect predictor of performance. However, in most cases, these employees represent outliers when compared to the entire data set (Figure 9). It is important to evaluate the predictive accuracy of selection tools by analyzing the whole data set to see how well the test predicted performance across the sample population. In most cases, the overall correlation between test scores and job-performance is strong. Calculating the correlation coefficient is a great way to combat “the curse of the anecdote;” letting one prominent data point obscure the trend that represents the real story of this data set.



## Test Scores Versus Performance Measured by Sales



**FIGURE 9:** There is a clear trend in the data where higher scores on the test correlate with higher sales figures. However, Employee #2 and Employee #19 are clear outliers. Employee #2 performed poorly on the test, but very well on the job. Conversely, Employee #19 performed well on the test, but poorly on the job.

## Establishing Minimum (or Maximum) Cutoff Scores

Administering tests to current employees allows employers to set minimum or maximum cutoff scores to filter out unqualified applicants. Establishing a hard cutoff is particularly effective if a company has large applicant pools – in these cases, employers can afford to be selective, and cutoffs can be a huge time saver.

When determining where to set minimum cutoff score, companies should use the information gathered while testing current employees. There are a number of factors that go into setting appropriate cutoff scores, and the testing provider should be able to help with this process. But it is important to understand that there is no “magic number” for which anyone who scores above it will be a good fit, and anyone who scores below it is incapable of doing the job. However an organization chooses to set its cutoff scores, this is not how they work.

For example, imagine an employer is using a cognitive aptitude test to hire salespeople for an organization. The higher the cutoff is set, the more likely it is that people above the cutoff will have the critical thinking and problem solving skills necessary to perform well in the job. If the employer’s only concern is maximizing the hiring accuracy rate, then a high cutoff score would make sense. However, setting it too high is inadvisable because doing so will eliminate many capable applicants and run the risk of filtering out too many qualified people.





For hiring managers and recruiters who hire large numbers of people, this would be frustrating and counterproductive. In a sense, setting cutoff scores is part art and part science. To determine where the cutoff should be, a company needs to take into account the specific dynamics of its own hiring process, such as the size of its applicant pools, the applicant-to-hire ratio, and other factors. The takeaway here is simple. Using a minimum cutoff score can help minimize the risk of bad hires; the higher the cutoff score used, the lower the risk of a bad hire.

Minimum scores serve a clear function in the testing process, but what about maximum scores? Using maximum cutoff scores is generally NOT recommended. That is, it is not recommended to exclude someone because he or she scored too high on an aptitude test, for example. The research is not yet clear enough on the benefits of setting maximum cutoff scores.

Why would anyone consider excluding someone for being too smart? The theory goes like this. Some testing companies believe that scoring above the expected range on an aptitude test can be an indicator that a person will be bored by a particular job and want to move on, and that higher aptitude people will also have more opportunities to find other jobs than will lower aptitude employees. Essentially, the idea is that whereas low scores signify that candidates are a risk for involuntary turnover - because they may not be trainable or able to perform well - extremely high scores can be an indicator of risk for voluntary turnover. But the evidence that overqualified employees represent a greater flight risk is not very strong, and in fact one study refutes it pretty convincingly. Therefore, unless a company has a specific reason for doing so, it is generally not recommended to use maximum cutoff scores.



# Legal Issues Relating to Pre-Employment Testing

Besides helping a company realize improvements in various business outcomes, pre-employment testing can help enhance the objectivity, equitability, and legal defensibility of an organization's hiring process. All organizations should strive to ensure that all of their employee selection methods are equitable and legally compliant. As long as the tests are assessing skills and traits that are job-related, using tests will make hiring decisions more defensible by adding an extra layer of objectivity to the hiring process. Organizations that implement testing programs in accordance with legal guidelines are therefore better prepared to defend these procedures should a legal challenge to their hiring practices ever arise.

## Legal Guidelines Governing Pre-Employment Testing

Like all the other elements of a company's hiring process, pre-employment testing is subject to a series of federal laws governing hiring practices. The most important legal standards related to testing are contained in the [Uniform Guidelines on Employee Selection Procedures \(UGESP\)](#), which explicitly recognizes the right of employers to use pre-employment tests to make hiring decisions as long as those tests are job-related. The UGESP provides interpretive guidelines for federal agencies charged with enforcing the Civil Rights Act, and is designed to ensure equitability and prevent unfair discrimination in hiring. These guidelines inform the decisions made by the [Equal Employment Opportunity Commission \(EEOC\)](#), the federal agency that enforces federal employment discrimination laws.

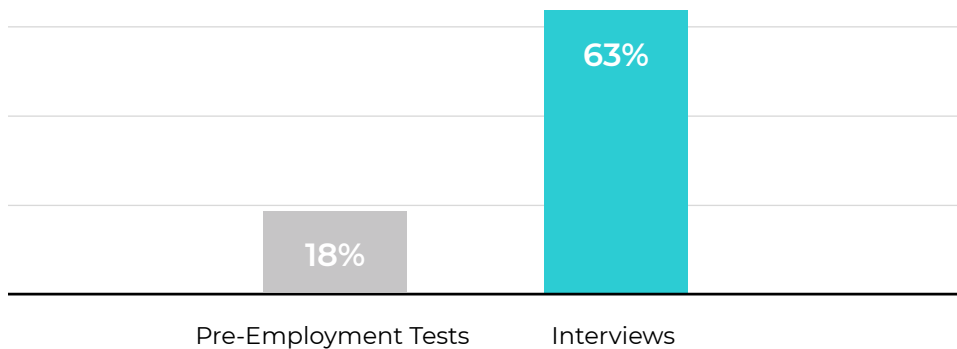


## Pre-Employment Tests Increase the Defensibility of the Hiring Process

One common misconception with pre-employment testing is that utilizing tests as part of the hiring process increases a company's legal exposure or somehow leads to additional legal risk. For companies that use professionally-developed, well-validated tests, the opposite is in fact true. Pre-employment tests, like other selection methodologies used by an employer, are governed by the same federal guidelines intended to ensure equitable and non-discriminatory hiring practices. This means that the same laws that apply to the use of pre-employment tests also apply to all other selection methods, which may include screening candidates by experience and education, conducting interviews, checking references, and more. Using relevant employment tests exposes companies to no greater risk than using any other hiring criteria.

Instead, the proper use of testing as a selection tool should actually reduce the likelihood of being sued. This is because testing makes the selection process fairer and more objective for all candidates. Tests are less subjective than interviews, where the personal biases of interviewers are much more likely to lead to discrimination claims. In fact, a recently published study shows that companies are over three times more likely to be sued because of interviews than for their use of aptitude, personality, or skills tests (Figure 10).

### Causes of Federal Court Cases Involving Employee Selection



**FIGURE 10:** In federal court cases involving employee selection, interviews are responsible 63% of the time, as compared to 18% for pre-employment tests. In other words, interviews are responsible for 3.5 times more court challenges than pre-employment tests.



Pre-employment tests also help minimize liability risk by enabling companies to more closely follow the guidelines of the EEOC, which stipulate that companies use reasonable efforts to remove biases from their hiring processes. Using validated tests that do not discriminate according to age, sex, race, or other factors can reduce subjective biases and insert an objective, reliable data point into each hiring decision.

Additionally, tests may help minimize the risk of hiring employees who may expose the company to even greater liability – some pre-employment tests can measure how likely it is that an applicant might engage in unsafe or unethical behavior on the job. Using pre-employment tests to assess and minimize these types of liability risks generally far outweigh the minimal risk associated with administering the tests.

## Job-Relatedness

Pre-employment tests can only reduce a company's legal exposure if the tests measure skills and traits that are related to performance for that particular position. This concept is known as the rule of "job-relatedness." In this instance, the EEOC's guidelines surrounding the use of tests are the same as their rules for any selection procedures: the tests must measure job-related skills and abilities. As a result, test selection is critical to legal defensibility. No matter how valid a test is, it won't be legally defensible if it is used in an invalid way. For example, a bank teller's daily work requirements might include adding and subtracting numbers, looking up customer activity, and filling out paperwork. Therefore, using an employment test that measures an applicant's fluency with basic mathematical concepts and ability to read and write would clearly be testing job-related capabilities. On the other hand, using a typing test for a forklift driver who won't be required to type is NOT a job-related selection measure. Using well validated tests and making sure that the tests, as well as all other selection methods, are job-related, is the best way to ensure legal compliance.

## Is it Illegal to Use Certain Types of Tests?

Selecting tests that fulfill the "job-relatedness" rule is critical. But in some situations, is it ever illegal to use certain types of tests for the purposes of employee selection? The answer is yes. For example, the Americans with Disabilities Act (ADA) prohibits the use of pre-hire tests that may be construed as a "medical exam" or a test of mental health in a pre-employment setting. One of the purposes of the ADA is to prohibit discrimination against individuals with psychiatric disabilities, meaning that clinical tests that assess an individual's mental health should generally not be used for employee selection.

For example, personality tests that are designed to screen for psychopathologies, such as the Minnesota Multiphasic Personality Inventory (MMPI), should not be used as part of an employment testing program. There are exceptions to this rule, and tests judged to be medical exams may be permitted if they are shown to be job-related and consistent with business necessity. In practice, this means that these exams are typically allowed for jobs that have public safety implications - for example, police forces commonly screen for psychological disorders. However, psychological tests that are deemed to be "medical exams" generally should not be used for employee selection purposes.



## Adverse Impact

Legal challenges to hiring practices are rare, but when they do occur, they are often connected to the issue of “adverse impact,” also known as “disparate impact.” Understanding the concept of adverse impact is central to understanding many of the issues surrounding legal defensibility in testing. Adverse impact is said to occur when members of a protected group or minority (e.g., a particular race, gender, etc.) receive unfavorable employment decisions (e.g., not being hired) more often than another non-minority group.

Aptitude testing is an example of a selection procedure that can have adverse impact, because different population groups tend to have different average scores on aptitude tests. Personality tests, on the other hand, do not generally result in adverse impact. One common misconception, however, is that adverse impact is an issue that is somehow uniquely associated with aptitude testing. In fact, almost every selection methodology used by employers produces a degree of adverse impact, because each disproportionately excludes members of a protected subgroup. Examples of common selection criteria that have adverse impact - often to a higher degree than aptitude tests - are:

- ✓ Minimum educational requirements
- ✓ Background checks
- ✓ Credit checks
- ✓ Work experience

Unlike many of the above means of evaluating potential employees, aptitude tests are generally extremely effective predictors of workplace performance. It is also important to note that using a test that results in adverse impact is legal as long as it is job-related and consistent with business necessity. Most of the best practices for pre-employment testing described earlier in this guide are intended to provide details about how companies can ensure that the tests they use are job-related. In addition to ensuring a testing program is legally compliant, following the rule of job-relatedness will allow a company to be confident that its testing program will be effective, because the tests will be measuring job-related abilities, skills, or traits.

## Helpful Links

- ✓ [EEOC Fact Sheet on Employment Testing](#)
- ✓ [Uniform Guidelines on Employee Selection Procedures \(UGESP\)](#)
- ✓ [Implementing Employment Testing \(SIOP\)](#)

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