

THE ANTI-DISCRIMINATORY SCREENING GUIDE

HOW TO CREATE A FAIRER AND DEFENSIBLE HIRING PROCESS

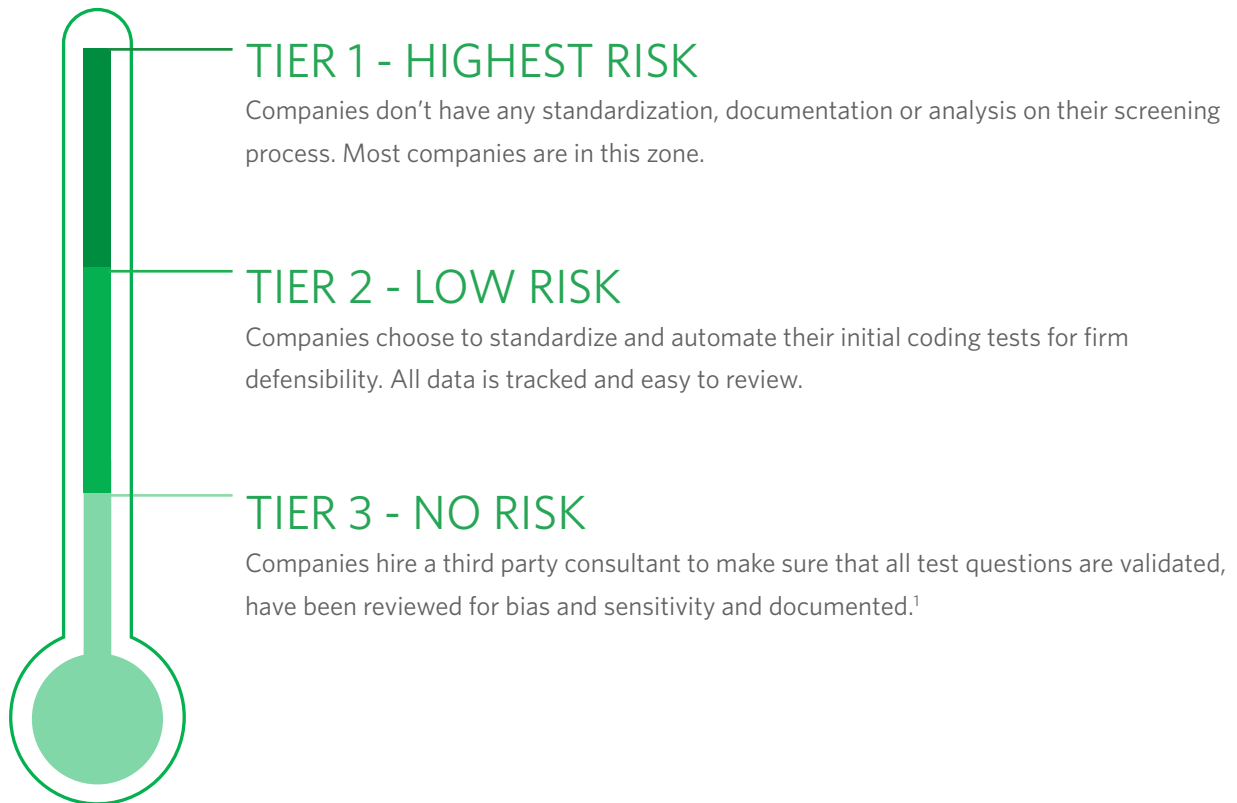


*Special thanks to diversity and
inclusivity author Joe Gerstrandt*



EXECUTIVE SUMMARY

Even with the best of intentions, most companies with traditional screening processes have too many variables in interviews, putting them at risk for discriminatory hiring. From the technical to the culture fit interview, interviewers commonly ask random questions without analyzing their impact. As leaders, it's good sense to proactively standardize your selection process by validating, standardizing and tracking the initial screening tests to filter through thousands of engineering candidates. This white paper outlines the problems with traditional screening systems and then offers a roadmap to boost fairness in your hiring process, including three tiers of protection depending on your needs. We spent months speaking with consultants on litigation support specifically on EEOC regulations, and psychometricians, on how to build tests more fairly. We found that there are 3 tiers of protection that most companies fall under:



1 - Berkeley Journal of Employment & Labor Law, 1982, Volume 5, Issue 1



INTRODUCTION

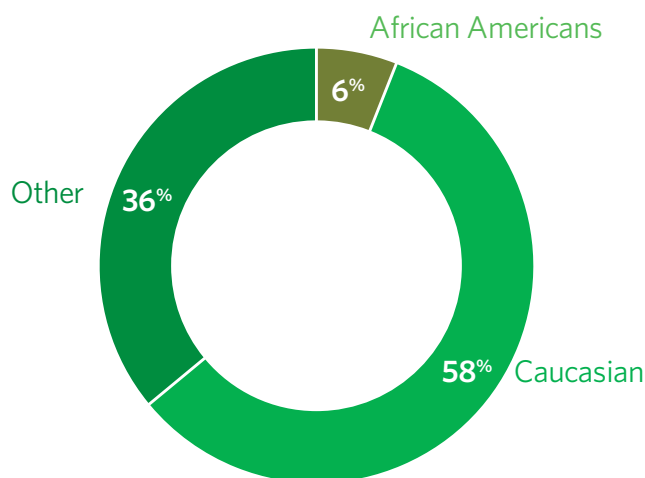
For any given corporation, you'd be hard-pressed not to find an "equal opportunity" boiler plate somewhere on its website. Companies often talk about the importance of hiring meritocratically, but have you ever wondered how and why people started using screening tests to begin the selection process? It's not a pleasant reality, but as Silicon Valley historian Leslie Berlin once said: "To invent the future, you must understand the past."

Asking people questions to test their skill is a concept that was first popularized in America during the first World War¹. The government built a committee of psychologists to develop something called an "army classification" program. **Their job was to assess skills of massive volumes of people quickly and efficiently—a sentiment that feels uncannily familiar to corporations today.** So they created a "group" test of intelligence to assess the skills of over 1.7 million men in less than 2 years.

By and large, the government screened enough people with the skills they needed. By World War II, employment testing became more and more ubiquitous. So, businesses started using this technique to gauge the abilities of their own candidates. The only problem was that no one stopped to consider the inclusivity, accuracy and fairness of these tests' language, content and delivery.

It wasn't until 1970's landmark Griggs vs. Duke² case when the pressure grew heavy on companies to be able to prove that employment tests didn't discriminate against entire subsets of people. A group of 13 African American employees filed a class action lawsuit against Duke Power Corporation because the requirement for all but the lowest-paying department was to score a minimum of the national median IQ.

PERCENTAGE OF PEOPLE WHO PASSED DUKE POWER COMPANY'S IQ TEST



Source: Berkeley Journal of Employment & Labor Law, 1982, Volume 5, Issue 1

1 - Berkeley Journal of Employment & Labor Law, 1982, Volume 5, Issue 1

2 - Maryland Law Review, 1971, Volume 31, Issue 3



INTRODUCTION

The IQ test requirement was unfair because the questions called for knowledge of language and education that were out of reach for underserved communities, which were primarily populated by minorities. It created an irrelevant barrier to entry for a disproportionate number of African American employees (see pie chart). Duke lost the case, and set the precedent for companies to carry the burden of proof of the effectiveness of their job requirements.

This breakthrough historical case serves as a good reminder for companies to pause, be aware of risks and take a proactive approach to building a fairer hiring process.

Discrimination can happen anytime in the workplace, but the initial screening sets the stage. A screening mechanism that filters through high volumes of candidates is the first opportunity to create an inclusive environment. Screening tests that turn away qualified people based on irrelevant factors (like that of Duke) violate the federal law that prohibits employers from discriminating against people based on sex, race, color, national origin and religion.

*“It shall be an unlawful employment practice for an employer...to discriminate against any individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual’s **race, color, religion, sex, or national origin.**”*

TITLE VII OF THE 1964 CIVIL RIGHTS ACT

Even with the best of intentions, most companies with traditional screening processes have too many variables in interviews, putting them at risk for discriminatory hiring. From the technical to the culture fit interview, interviewers commonly ask random questions without analyzing their impact. Hiring managers traditionally ask candidates to write code on a whiteboard to prove their skills, leaving no documented proof that the questions asked were reasonable and relevant.

As a leader of your organization, it’s good sense to proactively validate your selection process to make sure your hiring process is not discriminatory. It’s kind of like having homeowners insurance. You hope you won’t need it, but it’s important to cover your bases and be able to prove that your work environment is fair. In this guide, you’ll find a road map to help you gain a better understanding of the problems around traditional screening systems. We’ve also broken down the best approach that’s proven to eradicate biases.

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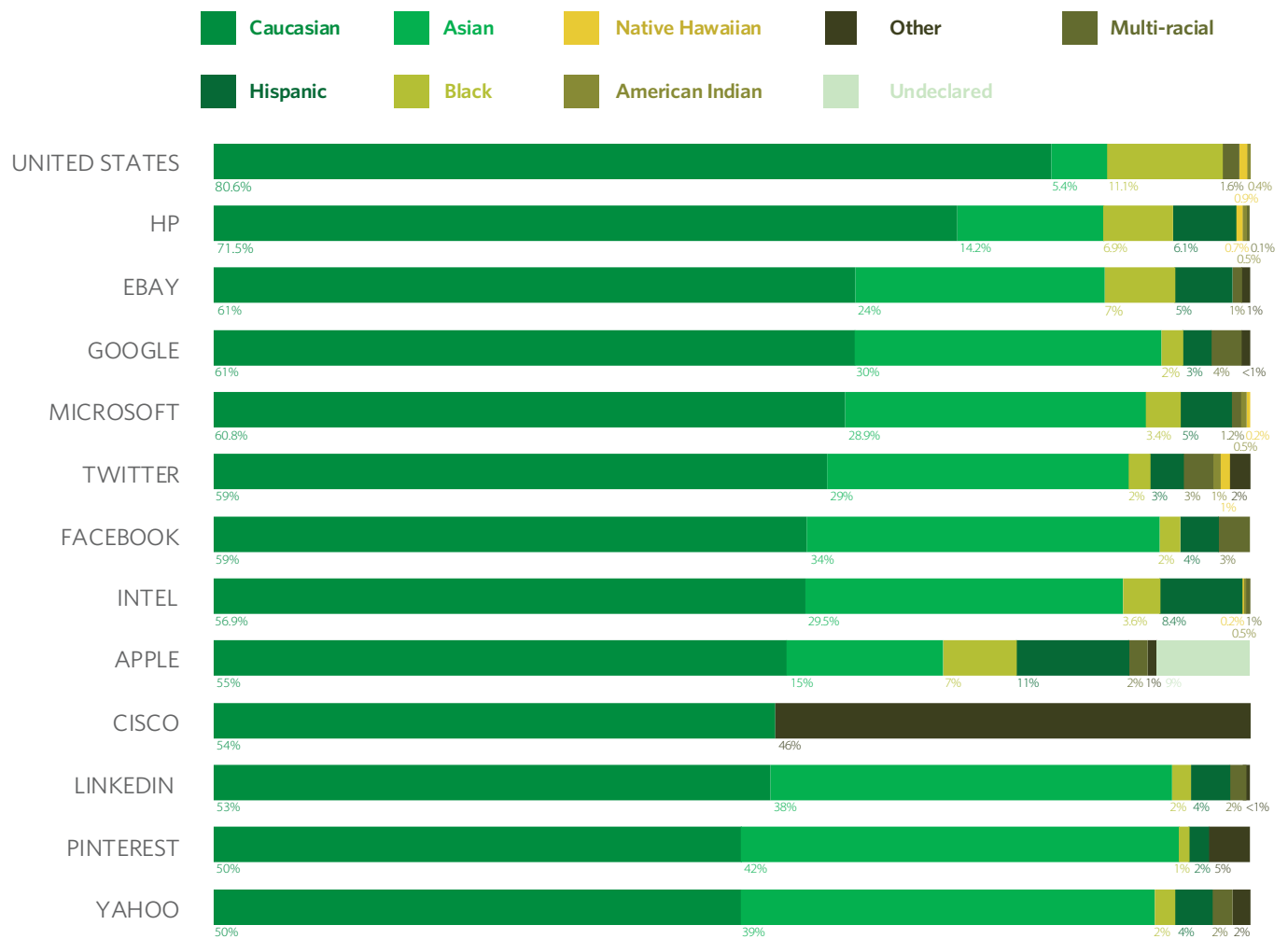
I. WHAT'S FUELING PRESSURE ON FAIRNESS?

THE HIGH COST OF DISCRIMINATION

Discrimination in the workplace has been an ongoing issue for nearly half a century. But over the past few years, more and more companies are taking concrete, proactive steps to help alleviate these risks. Consider that:

- Nearly every major tech company has published their corporate diversity stats. For instance, here's a graph depicting the racial breakdown of the biggest Silicon Valley tech companies, courtesy of Gigaom:

OVERALL DIVERSITY



Gigaom graphics by Biz Carson. Source: Company diversity report released as of August 12, 2014 and the U.S. Bureau of Labor Statistic 2012-2013 Labour Force Characteristics by Race and Age report. Note: Hispanics are not identified because the BLS says, "People whose ethnicity is identified as Hispanic or Latino may be of any race." *Cisco only identifies Caucasian and other minorities. It does not provide a more complete breakdown.



- A report from the Equal Employment Opportunity Commission (EEOC) found nearly 100,000 workplace discrimination charges in 2010—an all-time record high³.
- Over the last 20 years, there's been a significant uptick in the amount of litigation and regulation. The budget for the EEOC grew from \$3 million in 1966 to \$142 million in 1981. In the same time period, the number of civil rights cases grew from 3,970 to 13,750.
- As many as 20% of large U.S. employers with diversity programs now provide bias training, up from 2% five years ago, and that figure could hit 50% in five years, says Margaret Regan, head of FutureWork Institute, a global diversity consultancy.

But why is this topic gaining steam *now*? The answer is at least 3-fold.

First of all, the last decade has produced a massive shift toward transparency online. Social media has created a global megaphone for people to talk about these issues. Joe Gerstandt, diversity and inclusion keynote speaker and author, says he's found this to be one big reason for this uptick in interest in diversity and inclusion.



“A lot of folks who were asking questions about diversity and inclusion 10 to 15 years ago were easy to overlook. Now, if you look at Facebook and Twitter, there are raging conversations on what companies are doing well and what they're not doing well on this topic.”

**JOE GERSTANDT, DIVERSITY AND INCLUSION
SPEAKER AND AUTHOR.**

³ - EEOC Newsroom, <http://www.eeoc.gov/>



It puts the spotlight on companies, holding them accountable. This explains why so many companies are proactively publishing their diversity numbers. Rather than be talked about, they're aiming to take ownership of the problem and seeking solutions.

Just [look at the headline](#) that Twitter's former engineering manager Leslie Miley made when he wrote a Medium post about his experiences with the lack of diversity at Twitter HQ at the time:

"TWITTER ENGINEER LEAVES COMPANY BECAUSE OF DIVERSITY ISSUES" —TechCrunch

"ANOTHER TOP EMPLOYEE IS SLAMMING THE COMPANY'S LACK OF DIVERSITY" —Washington Post

"EX-ENGINEER LASHES OUT OVER COMPANY'S LACK OF DIVERSITY" —CNET

These might have just been words on a screen, but the virality of the post pushed Twitter's senior vice president of engineering to pledge for "faster progress" after the public criticism.

Second of all, we're also becoming a more global world, building software that touches the lives of people from every corner of the globe. It's increasingly important for companies to create a diverse team in order to produce products and services that appeal to different types of people.

Having a diverse set of perspectives forces one another to think more complexly, which leads teams to think through decisions more effectively. NPR recently detailed a study that compared the success of scientific research papers written by diverse teams versus non-diverse teams. The former received far more citations (the measure for success) than the latter. In other words, the papers written by diverse teams produced more impact on future research.

Finally, there's a growing body of fascinating new research in neuroscience that's revealing important problems in the way we inherently make decisions. A high volume of studies all point to the same message: Humans are naturally irrational. We carry implicit biases in everyday conversations that naturally impact our judgement.

"In the past, some people thought this idea was touchy and fuzzy, but the science proving implicit bias is actually strong," Gerstandt says.



II. THE RISKY STATE OF HIRING TODAY

Everyone claims to be fair, rational and meritocratic when it comes to hiring, but recent findings show that it's a lot easier said than done for most companies today. There's a growing body of fascinating research on the implicit biases that are inherently hardwired in the human mind...as early as the first impression. We like to believe that we're objective in our decision-making, but the reality is that we can't help but make preconceived assumptions based on what we've internalized about people. Psychologists and behavioral experts call these assumptions "heuristics."

We're all scientifically inclined to jump to irrational conclusions based on dozens of intuitive assumptions. In fact, award-winning psychologist Daniel Kahneman's book, *Thinking Fast and Slow* highlights numerous different heuristics that we commonly use to make decisions.

Here are three:

- **"The Availability Heuristic:"** We tend to estimate larger numbers for situations with which we are already familiar. For instance, if you get mugged, you're more likely to overestimate the number of muggings in a given city than someone who has never gotten mugged.
- **"The Halo Effect:"** The tendency to like or dislike everything about a person—even things you haven't seen for yourself. There's no way Jennifer Lawrence could mug someone, right?
- **"Coherent Stories:"** We're inclined to make associations between events, situations and patterns. It's our way of making sense of things we don't understand. For instance, people often think *"He's homeless because he's lazy."*

Howard Ross, author of *Everyday Bias* offers a simple example to demonstrate how irrational heuristics impair judgement. If you had to choose one of these guys below to date your daughter, who would you choose?



The reality: The man on the left is Mayor John Fetterman of Braddock, PA. He has a master's degree in public policy from Harvard. He's served in Americorps and made significant strides in helping improve the economy of his community.

The man on the right is serial killer, Ted Bundy.



II. THE RISKY STATE OF HIRING TODAY

Biases, or heuristics, are the brain's way of detecting dangers. The problem arises when similar impartial assumptions take over when you're making hiring decisions in the workplace.

"If you think about it, qualifications of a job are just a bunch of agreed upon biases that help us find the right candidate for the job," Ross said in a talk at Google's headquarters on Implicit Bias.

The stubborn thing about discrimination is that, when it's so ingrained within our minds, it's hard to tell when you're unconsciously discriminating. Ironically, people tend to seek out studies that defend their biases.

The National Bureau of Economic Study did a field experiment with fake resumes in help-wanted ads⁴. On some resumes, they used African American sounding names, like Lakisha and Jamal. On other resumes with the same qualifications, they used white sounding names like Emily and Greg. Turns out, white names receive 50% more callbacks for interviews. And it wasn't just the names. Applicants living in better neighborhoods received more callbacks. This was in 2003.

4 - National Bureau of Economic Research, 2003, <http://www.nber.org/papers/w9873.pdf>



THE HIGH COST OF ASSUMPTIONS

Likewise, female engineers face unfair biases that are purely based on their gender. Gayle Laakmann McDowell, author of *Cracking the Coding Interview*, can't count the number of times that people assume that she was a recruiter—not software engineer—at Google. In fact, the first words on the book cover jacket are:

"I'm not a recruiter. I am a software engineer."

Amazon.com's #1 Best-Selling Interview Book

CRACKING *the* CODING INTERVIEW

I am not a recruiter. I am a software engineer. And as such, I know what it's like to be asked to whip up brilliant algorithms on the spot and then write flawless code on a whiteboard. I've been through this—as a candidate and as an interviewer.

Cracking the Coding Interview, 6th Edition is here to help you through this process, teaching you what you need to know and enabling you to perform at your very best. I've coached and interviewed hundreds of software engineers. The result is this book.

Learn how to uncover the hints and hidden details in a question, discover how to break down a problem into manageable chunks, develop techniques to unstick yourself when stuck, learn (or re-learn) core computer science concepts, and practice on 189 interview questions and solutions.

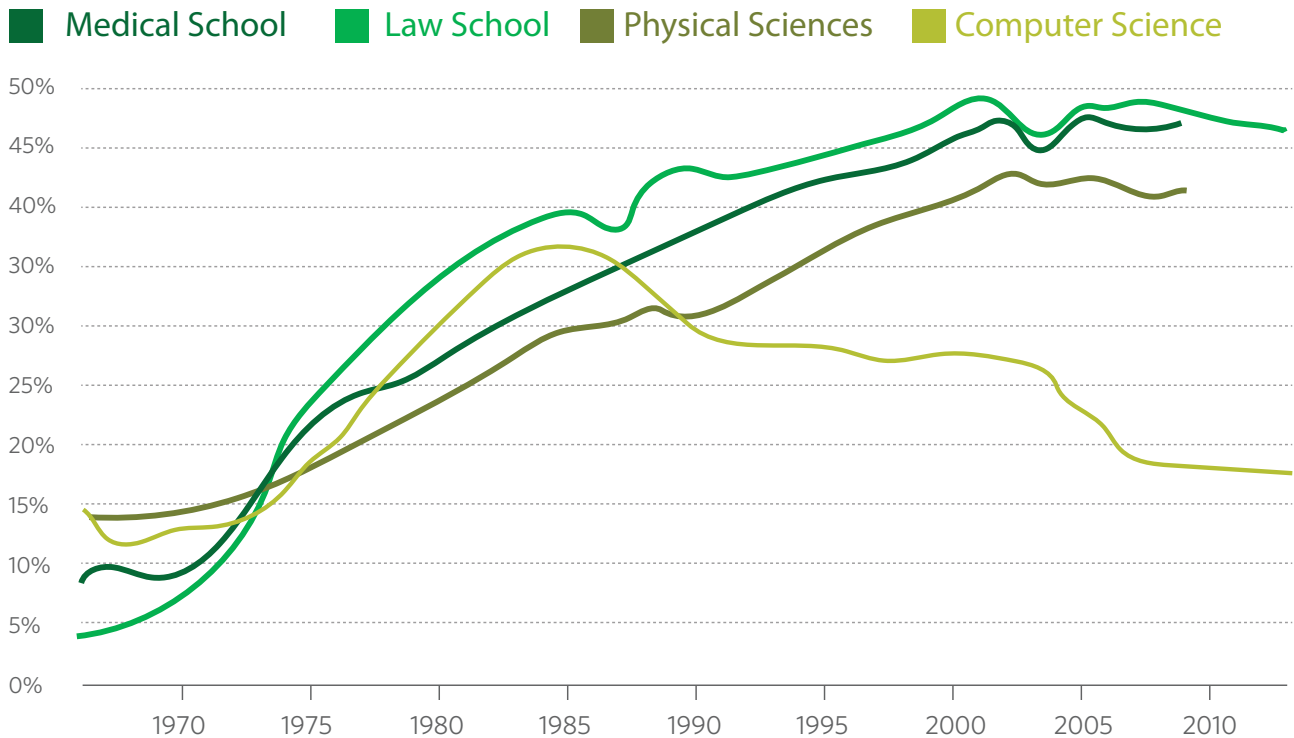


Other common labels for female engineers: receptionist, girlfriends and marketers. And even if female engineers get the benefit of the doubt, they're often grouped under "front-end engineering" because it's more closely related to design. And even female front-end engineers are often mistaken for designers. Unsurprisingly, this could be linked to low entrance and high exit rates for female software engineers:



II. THE RISKY STATE OF HIRING TODAY

% OF WOMEN MAJORS, BY FIELD



Source: National Science Foundation, American Bar Association, American Association of Medical Colleges

Credit: Quoc Trung Bui/NPR

It's not only a moral obligation for companies to proactively correct unfair hiring practices but also a business problem. Relying on assumptions or heuristics means you're missing out on massive pools of talent, like an entire gender of engineers.

Again, it's often unintentional—it's baked into daily habits. Another research study by the University of Pennsylvania analyzed the NBA referees and found that basketball referees give fouls to the other races more often than the players of their own race.

In fact, Gerstrandt recently crystallized a bias first-hand:

“One thing I wanted to try to change was the amount of times I interrupt people. In that process, I realized that I was much more likely to interrupt a woman than a man. It’s not a warm thing to discover about myself because it doesn’t reflect my values. But it gave me the opportunity to do something about it.”



III. HOW TO LEGITIMIZE YOUR SCREENING PROCESS

All too often, hiring managers focus on short-term metrics, like number of candidates interviewed, leads or time-to-hire. While these are important, if you're not also carving out the time to take a step back to think about long-term impact, your team will be operating under bad habits. They'll run through candidates without offering them a great experience. They'll focus on candidate leads while disregarding the required skills of the candidate. Worst of all, they'll be busy working so fast, they'll neglect to document the screening process.

If a disgruntled candidate files a lawsuit, you'll be left scrambling to defend your screening process instead of focusing on achieving your goals and building strong teams. There have been numerous cases against companies who couldn't provide enough evidence of a fair, legitimate selection process:

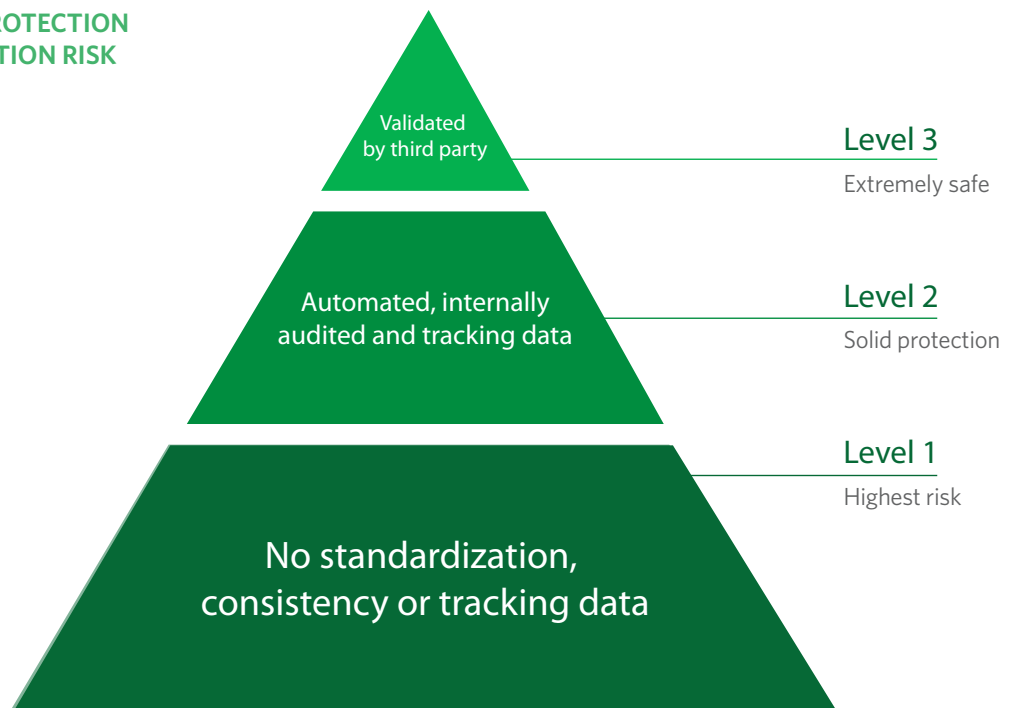
- EEOC vs Ford Motor Co. and United Automobile Workers of America
- EEOC vs Dial Corp
- EEOC v. Daimlerchrysler Corp

In fact, the commission got \$22.5 million through litigation of such cases in 2014. So, what should you do?

THE HIERARCHY OF PROTECTION AGAINST DISCRIMINATION

There are three levels of protection that companies generally fit into.

THE HIERARCHY OF PROTECTION AGAINST DISCRIMINATION RISK





III. HOW TO LEGITIMIZE YOUR SCREENING PROCESS

LEVEL 1

Unfair hiring is usually a problem that surfaces after it's already too late. Most companies fall into the Level 1 high-risk section of the hierarchy. Interviewers ask different questions across different teams to varying people. Some might be knowledge-based questions while others are asking brain teasers. One person might focus on culture fit in the initial screening while their colleagues are screening other candidates for technical aptitude for the same role.

This is how most companies are operating. To back this up, there's a really surprising [study on judgement and decision making](#) revealing that one of the most common ways American decision-makers choose candidates is by "unstructured interviews." Meaning, people ask different questions of different applicants in whatever way they prefer. Again, they hire based on coffee meetings, referrals and glowing resumes.

Referring back to all of the problems highlighted in Section 2 "The Risky State of Hiring," the conventional way of hiring is often driven by emotions, biases and heuristics. This is an unfair and exclusive method that turns away a lot of great candidates simply because they don't fall into personal preferences.

If your interviews are unstructured, random or purely verbal and undocumented, you fall into the high risk "Level 1" of the hierarchy of protection.

LEVEL 2

The next level of protection is to standardize, automate and track your initial screening process.

For large companies who need to be agile, there's one thing you need to account for off the bat: Can your candidates code? For years, notable engineers have repeatedly ([2007](#), [2012](#) and as recent as [2015](#)) pointed out that a major chunk of applicants can't write simple programs. Algorithm challenges are best used to test basic knowledge of coding skills. And using algorithm and data structure challenges to screen candidates' basic technical skills in the initial screening is the most effective way to standardize your recruiting process.

Also Read: [How to Design Impactful Coding Challenges](#)

"Having a set of standard test questions to screen candidates is far less risky than asking questions randomly without tracking hiring data."

But what are the steps to creating a defensible system? We spent months meticulously narrowing down the best practices that have been proven to safeguard hundreds of corporations' screening systems for technology professionals. We spoke with numerous consultants on litigation support specifically on EEOC regulations, and psychometricians, including [Jill R. van den Heuvel, Ph.D](#) of [Alpine Testing Solutions](#), a test development and validation services company.

Here are the steps to create a solid system to protect yourself from potential missteps.



III. HOW TO LEGITIMIZE YOUR SCREENING PROCESS

Step 1: Sharpen Your Image of the Job

This sounds simple, but you'd be surprised how many people falter on the first step. If you think about it, every single person in any given team has a completely different idea of what a job should entail—especially at newer companies. Hiring managers often don't have a clear idea of which coding skills the new engineer should have. If the EOCC asks for evidence that the tests or coding challenges match the actual job description, you might come up short.

A “software engineer”, for instance, could be focused on fixing bugs or troubleshooting, another could be building databases, while a third could be maintaining existing systems. If you and your team can't sit down and agree on what the candidate's job should be, you won't be able to prove fairness in court. The image can't be a “software engineer” in the abstract. The more specific and descriptive your job image, the better.

Step 2: Use Automated Code Assessments to Screen Coding Skills and Eliminate Bias

For software engineering jobs, your candidates will need to code on the job at the very core and basic level. Choosing fundamental algorithm and data structure challenges offers a solid system that not only tests for crucial basic coding skills but also can be mapped back to most—if not all—software engineering jobs.

But inconsistent questions lead to mistakes and biases. [HackerRank for Work](#) helps to standardize the hiring and interview process, allowing each candidate (regardless of ethnicity, gender, etc.) to take the same test, adding a strong layer of defensibility. In other words, automating the initial screening process removes the implicit biases ingrained in every human mind. Since technical skills are quantifiable, distributing automated code assessments incorporates fairness to your process. Not only is it more fair when there is no human bias present, it's also consistent and standardized.

Dr. Gerstandt agrees that blind automated code challenges are a much more inclusive way to hire than traditional selection methods. “Resume screening processes that show gender, ethnicities can affect how companies respond. I'd suggest removing everything other than what's relevant to the job is a good practice,” he says.

“Resume screening processes that show gender, ethnicities can affect how companies respond. I'd suggest removing everything other than what's relevant to the job is a good practice.”

DR. JOE GERSTANDT, KEYNOTE SPEAKER AND CONSULTANT



III. HOW TO LEGITIMIZE YOUR SCREENING PROCESS

One research study that looked at blind orchestra auditions found evidence to support Gerstandt's stance. Researchers found that removing the identity of the orchestrators—and just purely listening to the sound of the auditions—made it 50% more likely that a woman would advance to the finals.

You can apply the same level of fairness to your screening technique with automated coding assessments.

[Try a free trial of HackerRank Code Challenges to remove biases your screening process.](#)

Step 3: Is the Language in Your Problem Statements or Questions Discriminatory?

It's worth investing a few minutes to make sure that the language used to ask questions does not discriminate any subsets of people. For instance, if your question unnecessarily uses academic jargon to gauge the candidate's fundamental skills in computer science, they're weeding out people who happened to be self-taught programmers. Unless having knowledge of academic terminology is important to the job, this type of question could be misconstrued as discriminatory.

Having a handful of engineers from diverse backgrounds review these tests is critical to ensuring there's a link between code assessments and the skills required for the job. Dr. Jill van den Heuvel studies the science of psychological measurement. She emphasizes that the context your language creates matters. For instance, in an extremely simplified example, if the question asks: If the ball moves from the 50 yard line to the 40 yard line on the football field, how many yards did it move?

“That might sounds like a basic subtraction problem (50 yards–40 yards), but studies show that women are more likely to get this question wrong. Likewise, if you ask a question about knitting, men are more likely to get that question wrong.”

DR. VAN DEN HEUVEL SAYS

To save a substantial amount of time, you can choose HackerRank coding challenges that have already been pre-validated. In other words, we've worked with an external, objective third party to work through Steps 1–3 and test for any discriminatory language or criteria.

Here's an example of a problem statement that's been tested for discriminatory testing:



III. HOW TO LEGITIMIZE YOUR SCREENING PROCESS

<p style="text-align: center;">Build the sequences</p> <p>A subsequence of string, s, is obtained by deleting one or more characters from s. For example, the set of subsequences for string $s="abc"$ would be $\{"a", "ab", "ac", "abc", "b", "bc", "c", ""\}$ (recall that the empty string is a subsequence of all strings).</p> <p>Complete the build Subsequences function in your editor. It has 1 parameter: a string, s. It must return an array of strings containing all possible subsequences of s—in alphabetical order. Do not include the empty string in your returned array of subsequences.</p> <p style="text-align: center;">Input Format</p> <p>The locked stub code in your editor reads a single string, s, from stdin and passes it to your function.</p>	<p style="text-align: center;">Constraints</p> <p>$1 < s < 16$</p> <p>s is a string of unique lowercase letters (a-z).</p> <p style="text-align: center;">Output Format</p> <p>Output to stdout is handled by the locked stub code in your editor, which prints each element of the returned array on a new line.</p> <p style="text-align: center;">Sample Input 0</p> <p style="text-align: center;">ba</p> <p style="text-align: center;">Sample Output 0</p> <p style="text-align: center;">a b ba</p>
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Step 4: Prepare Candidates on What They'll be Tested On

This is a practice that more companies should do—not only to boost fairness in the process but also to surface more high-quality candidates. It's another way to reduce random testing in your interview process. If you prepare candidates properly on the fundamental coding challenges, you increase the odds of testing for true aptitude rather than people who happen to know the question you asked that day.

Adding consistent questions—tailored to specific jobs—and preparing your candidates is the key to a truly fair screening process for software engineers. Eliminating the human intervention in the very first part of the screening helps level the playing field. There's less chance of a diagnosis bias, or first impression bias, made by interviewers or reviewers whose emotions are unpredictable.

LEVEL 3

If you're looking to add an iron steel padlock on the gate of your testing process, then the highest level of protection is hiring a third party consultant group to validate all of your questions.

Alpine Testing Solutions is one example of a consulting firm who will carry out appropriate validation services.



They'll work with your team to create a clear job image, and ensure that there's a link between your questions and the job itself. The third party may ask external engineers to take the test and review the questions to ensure they are appropriate. Finally, they will handle creating a detailed report that serves as proof of the validity of your report.

Other similar validation providers are:

- Rocket-Hire
- Biddle Group
- FMP Consulting

To reiterate, it is absolutely *not a legal requirement* to hire a consulting firm to validate your tests. You can very well take the same steps that such consultants take (outlined in Level 2), and sufficiently provide the evidence you need to prove that your hiring process is fair. In fact, considering that most companies have zero protection, it's a rare and extreme case for companies to level up to the tip of the triangle chart.



CONCLUSION

As leaders of large corporations entrusted with the livelihood of millions of people, it's more important than ever to be proactive in minimizing the natural biases that interfere with our judgement. By making tweaks to standardize your interviewing process, your screening system will not only hold up to lawful scrutiny but also stop turning away qualified candidates who don't fit your biases.

More and more companies are investing in creating a more inclusive environment not only to protect themselves against litigation but also to promote diversity in their teams to produce better products. As the world is growing increasingly connected, transparent and global, companies with automated, streamlined screening systems with built-in documentation will come out winners with a more inclusive and diverse workforce.

