Evaluating Automated Employment Decision Tools

In late 2021, New York City (NYC) passed a bill addressing the use of Automated Employment Decision Tools (AEDT) in selection processes.[1] The bill defines an AEDT as any computational tool that produces a score, recommendation, or classification of job candidates utilized to make selection decisions. Language from the bill suggests that tools that meet these criteria and are used for hiring or promoting are subject to a 'bias audit' conducted within the prior year. Rather than target only narrowly defined artificial intelligence (AI) tools, which have been a recent topic of interest for regulatory agencies, including the Equal Employment Opportunity Commission (EEOC), the NYC bill appears to also potentially cover more traditional assessments used by employers that use 'data analytics' or 'statistical modeling' to assess job candidates, which may include tools like automated resume screens, scored applications, personality assessments, and cognitive oriented tests.

Importantly, an 'independent auditor' must conduct the bias audit, suggesting that an in-house audit may fail to comply with the bill. The bill requires that the bias audit include a disparate (adverse) impact analysis for gender and race, at a minimum, and suggests that other dimensions of bias may be considered. In addition, the bill requires greater transparency around the use of AEDTs. Employers must inform job candidates of the use of an AEDT and disclose the job qualifications and characteristics being evaluated. There are many nuances to this bill where additional guidance will hopefully be forthcoming. The bill goes into effect January 1, 2023.

So, what should employers do? We suggest that employers talk to legal counsel about this bill as a starting point. Based on those discussions, employers may decide to retain the services of an independent auditor with expertise in the development, evaluation and validation of AEDTs, as well as expertise in the analysis of AEDTs for adverse impact. Industrial and Organizational (I/O) Psychologists, who are trained to study the world of work and design, evaluate and validate a wide variety of HR practices, are particularly well suited to perform these types of audits. Recent I/O psychology literature has discussed approaches to evaluating these types of tools (e.g., Landers & Behrend, 2022; Tippins, McPhail, & Oswald, 2021). The Society of Industrial and Organizational Psychology (SIOP) recently released guidelines on the minimal requirements needed in order to rely on these types of tools to make employment decisions.

An I/O psychologist evaluation may consider a number of dimensions related to job relatedness, equal employment opportunity, and fairness. While the NYC bill does not provide specifics on what the bias audit should look like other than including analyses of adverse impact, based on the I/O psychology literature and the extensive experience DCI has accumulated from conducting hundreds of independent, third-party expert reviews over the last two decades, we suggest considering the following steps for an NYC bias audit:

1. Partner with counsel to identify all AEDTs used by your organization that are covered by the bill.
2. Identify how each AEDT is used in your organization's selection process(es) to make decisions.
3. Conduct adverse impact analyses of AEDT outcomes (or potential adverse impact based on scores) for race and sex.
4. For each AEDT, consider an evaluation of the following dimensions (see Figure 1).

AEDT Dimension	Key Questions to Consider
Purpose	• **What is the AEDT intended to accomplish?** • **Why was the AEDT created?**
Input Data Sources	• **What data sources serve as inputs?** • **How were the data sources created?** • **Can reliability of the data provided be demonstrated or reasonably assumed?**
Model Features and Weights	• **What process was used to transform data inputs into model features?** • **Were theoretical, logical, and/or empirical dimensions considered?** • **How are features combined into an overall metric (score, band) for candidates?** • **Are relative weights of features in the model consistent with relationship expectations?**
Linkage of features to job characteristics/ qualifications	• **Are the features or feature sets conceptually linked to job information or requirements?** • **If yes, what was the job source data? How was linkage performed? Who was involved?**
Development process	• **What drove initial model development and any model refinement?** • **Were theoretical, logical, and/or empirical dimensions considered?** • **What information is available about the sample representativeness?**
Model Prediction and other psychometric evaluations	• **Was a professionally acceptable criterion validation study performed where AEDT outcomes were related to work outcomes?** • **What information is available about the representativeness of any samples used in the validation process?** • **Was reliability directed assessed or implied?** • **Was a business case study performed to show the financial value of the AEDT?** • **Are decision rules related to the use of the model or AEDT supported?**
Procedural fairness and transparency	• **Is the AEDT transparent and can it be explained?** • **Is it clear what is being measured and can this be communicated to candidates?** • **Is the AEDT process standardized?** • **Are data generally complete for candidates?** • **Are any features on their face problematic?**

Figure 1. AEDT Dimensions Evaluations Table

As the table above demonstrates, potential audit dimensions are complex, nuanced and likely require detailed documentation for formal evaluation. The I/O psychologists at DCI have performed independent evaluations for decades that consider similar dimensions. Having said that, advances in data, artificial intelligence and the legal landscape add new complexities to this work. We are working with clients and law firms to stay current on the NYC and related laws, and we have developed a blueprint and process plan for conducting bias audits in this context. Feel free to **reach out to the experts at DCI** to discuss these complex and evolving issues.

Resources For Additional Information:
• Principles for the Validation and Use of Personnel Selection Procedures (5th Ed.; SIOP, 2018) – **link here**
• SIOP Statement on the use of Artificial Intelligence (AI) for Hiring: Guidance on the Effective use of AI-Based Assessments (2022) – **link here**
• Landers, R.N., & Behrend, T. S. (2022). Auditing the AI Auditors: A Framework for Evaluating Fairness and Bias in High Stakes AI Predictive Models. American Psychologist. Advance online publication. **http://dx.doi.org/10.1037/amp0000972**.
• Tippins, N.T., Oswald, F. L., & McPhail, S. M. (2021). Scientific, Legal, and Ethical Concerns about AI-based Personnel Selection Tools. Personnel Assessment and Decisions, 7 (2). **https://doi.org/10.25035/pad.2021.02.001**.