

Automated Employment Decision Tools and Ableism: A Critical Analysis with Recommendations

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This study examines the potential for harm to job seekers with disabilities due to inadequate accommodations and accessibility features in automated employment decision tools (AEDTs). Data was collected and analyzed from 30 AEDT vendors, focusing on publicly available information regarding accommodations and accessibility features, organizational size, specific products offered, bias testing practices, and accessibility staff. Most vendors in the study do not offer accommodations along with their AEDT products and are not actively addressing the needs of candidates with disabilities. Worse, some AEDT providers misrepresent their tools with claims of “bias-free” decision-making or offer employment assessments based on questionable video analysis approaches. These findings align with broader concerns about the potential for screen-out discrimination and other harms as a result of flaws in the design and implementation of AEDTs.

CCS Concepts: • Social and professional topics → People with disabilities; • Human-centered computing;

Additional Key Words and Phrases: Automated Employment Decision Tools, Bias, Screen-out

ACM Reference Format:

Anonymous 1 and Anonymous 2. 2023. Automated Employment Decision Tools and Ableism: A Critical Examination. In . ACM, New York, NY, USA, 10 pages.

<https://doi.org/XXXXXXX.XXXXXXX>

1 INTRODUCTION

In 2021, individuals in the United States (US) aged 16 to 64 with disabilities had an unemployment rate of 10.8%, more than double that of individuals without disabilities.[1] In 2020, the percentage of persons with a disability earning \$75,000 or more a year was 40.01% less than those without disabilities.[2] Diminished workforce representation has been a persistent concern for disability activists, and some fear this trend may be exacerbated with the rapid advancement of automated employment decision tools (AEDTs) that are often based on artificial intelligence or

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FAccTML '23, June 12–15, 2023, Chicago, IL

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ACM ISBN 978-1-4503-XXXX-X/18/06. . . \$15.00

<https://doi.org/XXXXXXX.XXXXXXX>

machine learning (AI/ML).¹[2, 3] Yet, nearly all Fortune 500 organizations have AI/ML tools and AEDTs in their talent acquisition technology plans.[4]

Examples of AEDTs include resume screening based on natural language processing (NLP), gamification of hiring interviews and processes, AI/ML-based video interview analysis, and interview chatbots. AEDTs affect candidates with disabilities in different ways, in the worst case, perpetuating a kind of digital ableism. E.g., some gamified employment tests may not be designed to accommodate neurodiversity or candidates with physical disabilities.² AI video interview software can also negatively impact both neurodivergent candidates and those with physical disabilities. In addition to other bias and validity concerns,[5] AI/ML video analysis algorithms may not recognize a candidate with a speech impairment or reduce the score of neurodivergent candidates based on atypical facial expressions. Shockingly, some AI video analysis algorithms are known to diagnose candidates as disabled.[2]

AEDTs are often marketed as objective, and as a means to reduce or eliminate bias. At least five of the products surveyed are misrepresented as “bias-free,” or are described with similar verbiage. But official guidance from the US National Institute of Standards and Technology (NIST) points out “it is not possible to achieve zero risk of bias in an AI system.”[5] Even for the small number of examined vendors that acknowledge an attempt to measure systemic bias in their offerings with statistical testing, physical design, graphical user interfaces (GUI), or other features can present difficulties for users with disabilities and lead to subsequent screen-out discrimination, where certain populations are unfairly disqualified from employment opportunities.³ While screen-out discrimination is a significant concern for impacted communities, often leading to adverse social and financial outcomes, screen out is also a potentially serious legal liability for employers operating AEDTs. The Americans with Disabilities Act (ADA) states that “Screen out because of a disability is unlawful if the individual who is screened out is able to perform the essential functions of the job, with a reasonable accommodation if one is legally required.”[3]

¹ An AEDT can be defined as “any computational process, derived from machine learning, statistical modeling, data analytics, or artificial intelligence, that issues simplified output, including a score, classification, or recommendation, that is used to substantially assist or replace discretionary decision making for making employment decisions that impact natural persons.”[6]

² Reasonable accommodations in the context of AEDTs typically involve alternate screening, evaluation, or interview processes for those with disabilities, sometimes referred to as “opt-out” processes.

³ Screen-out discrimination occurs when “a disability prevents a job applicant or employee from meeting—or lowers their performance on—a selection criterion, and the applicant or employee loses a job opportunity as a result.”[3] Crucially, screen out can arise from physical mechanisms, interface designs, or other features that present unfair difficulties for those with disabilities. Even if vendors somehow attain demographic parity in employment assessment scores, screen-out risks may not be adequately mitigated.

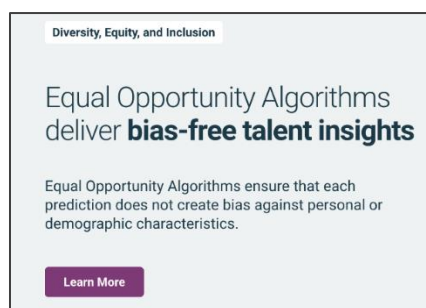


Fig. 1. A clipping from an AEDT vendor website. “Bias-free” is a striking claim given that official guidance from NIST recently stated this is not possible for AI systems.[5] Five vendors in the study use similar language on their websites.

In an effort to highlight the prevalence of screen-out discrimination risks due to AEDTs and to contribute to the broader dialog around AI/ML, AEDTs, and bias against those with disabilities, this study presents straightforward summary information related to 30 AEDT vendors, covering accommodations and accessibility features, organizational size, specific products offered, bias testing practices, and accessibility staff. Section 2 outlines data collection. Analysis in Section 3 indicates that some vendors appear to be actively addressing screen-out discrimination risks, while most are not. Section 4 closes this paper with recommendations for AEDT developers based on presented results and authoritative guidance.⁴ Appendix A presents visual summaries of collected data, and for improved reproducibility, the GitHub repository <https://github.com/xxxxxx/aedt-analysis> contains anonymized data, scripts for analysis, and other related artifacts.

2 DATA COLLECTION

A broad search resulted in a list of 30 software vendors, including well-known companies and smaller start-ups, offering AI/ML-enabled AEDTs with data regarding their characteristics available for examination via public channels like websites and LinkedIn. No formal sampling methodology was applied as identifying large numbers of vendors that affirmatively acknowledge the development of AI/ML-enabled AEDTs proved challenging. The compiled data represents a good faith effort to create a snapshot of the AEDT vendor market, and the tools in this study are likely applied to millions of people each year.⁵ However, the sample should not be considered exhaustive and may suffer from sampling bias, despite the authors’ best efforts to create a representative dataset for analysis. A description of the collected data is presented in Table 1 and a summary of results is available in Figure A.1.

⁴ Results and guidance are validated, in part, by the author’s experience as a job seeker with a disability.

⁵ A single vendor in the study employees over 250,000 people, while another’s public customer list includes an employer of over 700,000, and several additional top worldwide employers.

Table 1. Dictionary for complied data.

AEDT Characteristic	Assigned Values	Description
Bias-Free/No bias	Yes, No, Maybe	If yes, vendor's website displays the phrase "Bias-Free" or similar language, such as "eliminates bias," in relation to vendor's AEDT offering(s) or AI/ML technology in general.
Video Screening	Yes, No, Maybe	If yes, vendor's website declares that vendor integrates AI/ML video screening algorithms in their AEDT offering.
Resume/Profile Screening	Yes, No, Maybe	If yes, vendor's website declares that vendor integrates AI/ML text screening algorithms for candidates' resumes or profiles into their AEDT offering(s).
Chatbots	Yes, No, Maybe	If yes, vendor's website declares that vendor integrates chatbots into their AEDT offering(s).
Addresses Physical Disabilities	Yes, No, Maybe	If yes, vendor's website addresses ways to assist and/or the benefits of hiring candidates with physical disabilities.
Addresses Neurodiversity	Yes, No, Maybe	If yes, vendor's website addresses ways to assist and/or the benefits of hiring neurodivergent candidates.
Accessibility Staff	Yes, No, Maybe	If yes, there is public evidence of accessibility staff on the vendor's website or LinkedIn profile.
Offers Accommodations	Yes, No, Maybe	If yes, vendor mentions accommodations specifically for AEDT offering(s).
Immediate/Timeframe for Accommodations	Yes, No, Maybe	If yes, vendor provides immediate accommodations or a timeframe for when accommodations are made available for candidates subject to the AEDT offering(s).
Reports Bias Testing	Yes, No, Maybe	If yes, vendor states that it has submitted to a third-party audit or performs its own audits for bias in their AEDT offering(s). Note that such audits may not fully address bias testing for those with disabilities.
Number of Total Staff	Small ≤ 100 , 100 < Medium ≤ 1000 , Large > 1000	Estimated total employee count.

LinkedIn was used to determine the approximate size of the vendors, and to understand whether any staff with experience in software accessibility is associated with each firm. The type of software features offered by each vendor's AEDT(s) was then assessed, typically from the vendors' websites. Software features considered included video screenings, resume or profile screening, and chatbots. The text of the website was examined for key phrases such as "eliminate bias" or "bias free," and for references to statistical bias testing, accommodations, the timeliness of

accommodations, text specifically addressing physical disabilities, and text specifically addressing neurodivergent candidates. All AEDT characteristics were coded with a simple rubric: “Maybe” for partial evidence of the characteristic, “Yes” for affirmative evidence of the characteristic, and “No” for no evidence of the characteristic. Vendor size was categorized as small, medium, and large.

3 ANALYSIS

The majority of AEDT vendors (76.67%) do not address accommodations offered by the vendor on their websites or in public documentation. Market dynamics and regulation may enable vendors to pass this responsibility onto employers, small vendors may lack resources to support the necessary staff or additional system functionality, or some vendors may be unaware of screen-out risks. Since some vendors provide or address accommodations, some vendors are themselves large employers, and because accommodations are a direct mitigant for screen-out risks, much of the following analysis focuses on the relationships between various vendor characteristics, AEDT features, and whether a vendor offers accommodations.

To understand possible relationships between vendors who engage in statistical bias testing and those that offer accommodations for their AEDTs, [Table 2](#) presents the percentage of AEDT vendors that offer accommodations out of those that report bias testing. Given the questionable validity of video employment assessments and their potential relationship to screen-out risks, [Table 3](#) summarizes the intersection between vendors who offer AI/ML video assessments and vendors who offer accommodations. [Table 4](#) presents information about the interactions between vendors that engage in bias testing, vendors that offer video screenings, and vendors that offer accommodations. As smaller vendors may have a more difficult time developing and supporting accessibility features, [Table 5](#) compares smaller organizations to medium and larger size organizations across various AEDT attributes. Because neurodivergent candidates and candidates with physical disabilities may face different bias and stereotyping harms during the application process and may require different types of accommodations, [Table 6](#) presents a summary comparison of vendors in terms of whether their AEDT offerings or public documentation address neurodivergent candidates or those with physical disabilities.

Bias testing on the part of a vendor should indicate some awareness of AI/ML bias issues. But [Table 2](#) displays that most vendors in the study who report bias testing, do not offer accommodations. Out of the vendors that report bias testing, the majority (54.55%) do not offer accommodations, indicating that vendors that are aware of, or that conduct, statistical bias testing are often not addressing screen-out risks.

Table 2. Vendors that report bias testing grouped by whether they also offer accommodations.

Vendors that Report Bias Testing	
Accommodations: Yes	27.27%
Accommodations: No	54.55%
Accommodations: Maybe	18.18%

[Table 3](#) highlights the potential for screen-out discrimination arising from employment video screening for candidates with disabilities. AI/ML video screenings present myriad challenges for candidates with disabilities (in addition to their questionable scientific underpinnings and potential for other bias harms). Unfortunately, the vast majority of AEDT vendors who offer video screenings do not offer or address accommodations for those with disabilities who may be unfairly disqualified by these screenings.

Table 3. Vendors that offer video screening grouped by whether they also offer accommodations.

Vendors that Offer Video Screenings	
Accommodations: Yes	16.67%
Accommodations: No	83.33%
Accommodations: Maybe	0%

[Table 4](#) investigates the interaction between the characteristics in Tables [2](#) and [3](#). [Table 4](#) highlights that the plurality does not advertise their tool as “bias-free” (or use similar descriptions), does not offer video screening tools, and also does not offer accommodations. The second largest class of vendors is similar. They may advertise their tools as “bias-free” (or use similar descriptions), do not offer video screening tools, and also do not offer accommodations.

Table 4. Summarization of the interaction between vendors marketing with “bias-free” (or similar) language, offering video screening, and offering accommodations. The largest group of vendors is highlighted.

Bias-Free/No bias	Video Screening	Offers Accommodations	Count
Maybe	Maybe	Yes	1
	No	No	5
No	Maybe	No	2
	No	Maybe	2
		No	9
		Yes	3
	Yes	No	2
		Yes	1
Yes	No	No	2
	Yes	No	3

[Table 5](#) presents differences between small organizations with less than 100 employees and larger organizations. Smaller vendors tend to market their products as “bias-free” at a lower rate (11.67%) compared to larger organizations, even though larger organizations should have more resources and better access to compliance, legal, marketing, and scientific expertise. When examining other categories such as *Offers Accommodations* and *Reports Bias Testing*, data indicate that smaller vendors perform less favorably, and resource advantages may enable larger vendors to better facilitate accommodations for candidates with disabilities.

Table 5. Comparison of smaller organizations to medium and larger organizations.

	Bias Free/ No bias	Video Screening	Chatbots	Resume/ Profile Screening	Addresses Physical Disabilities	Addresses Neuro- diversity	Accessibility Staff	Offers Accommo- dations	Reports Bias Testing
Yes	8.34	-5.00	1.66	5.00	15.00	18.33	16.67	16.67	28.34
No	-11.67	3.33	-5.00	-5.00	-15.00	-18.33	-16.67	-23.33	-31.67
Maybe	3.33	1.67	--	--	--	--	--	--	3.33

[Table 6](#) shows that half of the examined vendors do not address physical disabilities or neurodiversity, and do not offer accommodations. Only one vendor in the study addresses both physical disabilities and neurodiversity and offers accommodations, and of the vendors that do offer accommodations, most only address neurodiversity. [Table 6](#) also draws out the four vendors that do not offer accommodations but address both physical disabilities and neurodiversity.

Table 6. Summarization of vendors' handling of neurodiversity, physical disabilities, and accommodations. The largest group of vendors is highlighted.

Addresses Physical Disabilities	Addresses Neurodiversity	Offers Accommodations	Count
No	No	No	15
	Yes	Maybe	2
		No	2
		Yes	4
Yes	No	No	2
	Yes	No	4
		Yes	1

Note that Figure [A.2](#) presents a simple decision tree, trained on the small group of analyzed organizations, to predict whether a vendor offers accommodations along with its AEDT(s). Though the decision tree achieves adequate accuracy for the examined vendors, it should not be used as a generalizable predictive tool. The tree presents some of the trends in the collected data as a flow chart and may be a helpful visual summary of overall findings.

4 RECOMMENDATIONS AND CONCLUSION

At minimum, the analysis herein points to gaps in the design and processes around AEDTs that can result in screen-out discrimination. At worst, the examined AEDTs may, when deployed at scale, result in automating ableism in employment processes—digitizing and perpetuating biases, social harms, and financial harms affecting those with disabilities. To mitigate screen-out risks and associated harms, this short text closes with several recommendations for AEDT vendors.

The first recommendation for AEDT vendors, bolstered by collected data, is to facilitate reasonable opt-out and accommodation processes for those with disabilities. Even if vendors can defer legal obligations for accommodations to employers or cannot muster resources to support opt-out processes, they can highlight the risks and harms associated with screen-out discrimination in their marketing materials, public documentation, and website copy. Relatedly, and as

highlighted by collected data, consideration of timeliness of accommodations is critical. Delays in the provision of accommodations can result in similar harms as the failure to provide accommodations, but almost no vendors in the study addressed timelines for accommodations. Vendor should also ensure that statistical bias testing, accessibility features, and opt-out processes consider both neurodivergent candidates and candidates with physical disabilities. Hiring staff with expertise in bias testing, software features for improved accessibility or accommodation processes may also enable AEDT vendors to better address screen-out risks.

As made obvious by collected data, vendors should avoid misleading claims such as “bias-free,” “no bias” or “eliminate bias” in their marketing. Eliminating all systemic, human, and statistical biases in AI/ML systems is not currently possible and is perhaps fundamentally impossible. This type of misleading marketing can perpetuate harm when employers that adopt AEDTs are led to believe they are mitigating bias, but in fact, may be automating systemic biases at scale. Another seemingly obvious step for vendors is to avoid video screening, affective computing, gamification, and other technologies that, while trendy, can lack evidence of construct validity or may give rise to differential validity concerns across demographic groups.

Though official guidance on complex issues related to bias in AEDTs may have been unavailable in the past, this is no longer the case. Authoritative technical standards, e.g., those issued by the International Standards Organization (ISO)[7] and Institute of Electrical and Electronics Engineers (IEEE)[8], are gradually coming to fruition. Moreover, NIST recently released comprehensive guidance for managing bias in AI/ML systems and a broader AI risk management framework.[5,9] Partnership on Employment and Accessible Technology (PEAT), supported by the US Department of Labor, provides specific guidance for accessibility and inclusion in workforce technologies.[10] AEDT vendors should align to official standards and guidance whenever possible, and the authors summarize some salient points from these resources here. Vendors should:

- Embrace human-centered design for incorporating and monitoring user feedback throughout the lifecycle of an AEDT system.
- Participate in information sharing initiatives and learn from past failed designs, e.g., via the AI Incident Database.[11]
- Engage external auditors to gain independent perspectives regarding the design, implementation, and operation of AEDT systems.
- Conduct impact assessments to better understand and document the potential benefits and harms of AEDT offerings.
- Increase diversity in design teams, and include those with disabilities in product design, implementation, or testing. (This may be especially important for organizations that do not have resources for highly trained accessibility staff).

Volumes of official guidance indicate that digital automation of decision making does not guarantee fairness, or even accuracy, in decision making. As with all impactful technologies, the

potential power of AEDTs should be accompanied by accountability, transparency, and risk management to better deliver on their promises of quick, objective, and standardized employment decision making—including the facilitation of timely, reasonable accommodations for candidates with disabilities. While some may genuinely question the need for AEDTs given the risks, there is no directly foreseeable end to their use. Proposed and passed regulations, e.g., the EU AI Act and New York City Local Law 144, mandate increased compliance burdens for AEDTs, but do not ban them. Market incentives and rampant AI hype may well continue to drive investment in the tools and companies that build them. While limited, this study highlights that AEDT vendors have much work to do and calls out potential avenues for improvement.

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APPENDIX A

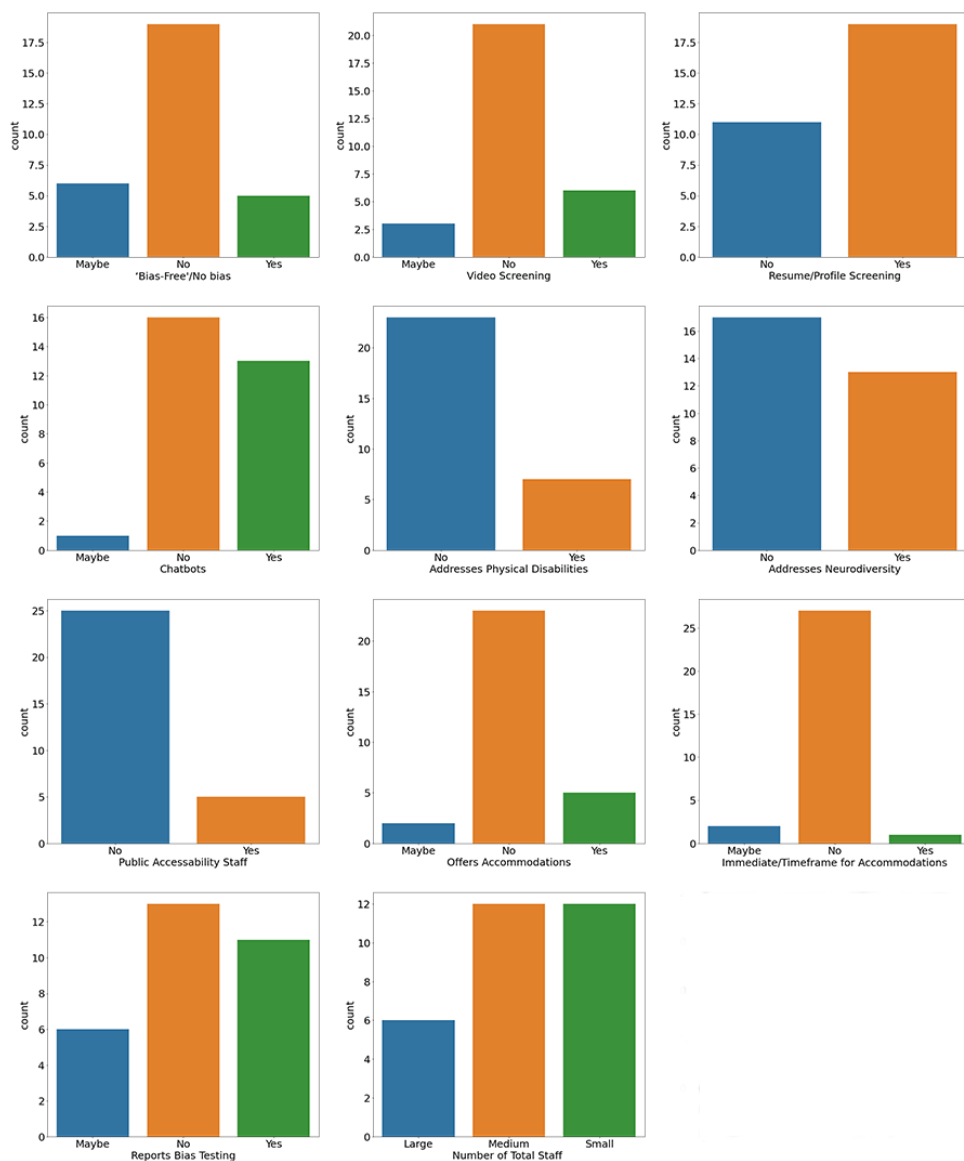


Fig. A.1: Frequency of all collected characteristics displayed as bar charts.

[Figure A.1](#) summarizes collected data. Note that 23 of 30 (76.67%) vendors do not offer accommodations for job seekers with disabilities, 25 of 30 (83.33%) appeared not to employ accessibility staff, and 17 of 30 (56.67%) vendors do not provide accommodations for their AEDTs.

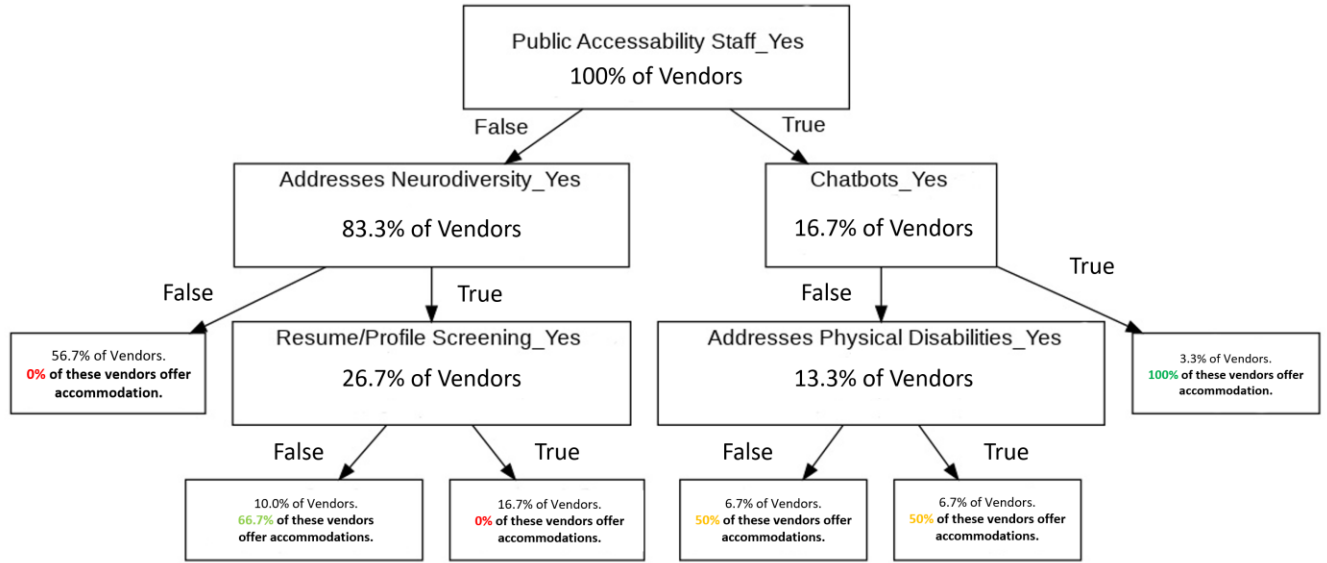


Fig. A.2: Decision tree trained to predict whether a vendor offers accommodations (i.e., *Accommodation_Yes* = *True*) as the prediction target. This figure is a data-driven flow chart that describes the conditions in the collected data that correlate with vendor offering accommodations.

The decision tree presented in [Figure A.2](#) provides several interesting observations. E.g., the most likely combination of characteristics that contribute to a vendor offering accommodations is no public evidence of accessibility staff (*Public Accessibility Staff_Yes* = *False*), addressing neurodiversity (*Addresses Neurodiversity_Yes* = *True*), but not engaging in resume or profile screening (*Resume/Profile Screening_Yes* = *False*). Two sets of characteristics appear most correlated to vendors not offering accommodations:

- A lack of evidence of public accessibility staff (*Public Accessibility Staff_Yes* = *False*) and failing to address neurodiversity (*Addresses Neurodiversity_Yes* = *False*).
- A lack of evidence of public accessibility staff (*Public Accessibility Staff_Yes* = *False*), addressing neurodiversity (*Addresses Neurodiversity_Yes* = *True*), and offering resume or profile screening features (*Resume/Profile Screening_Yes* = *True*).

These observations should not be considered generalizable trends, rather they are concise summaries of characteristics of the examined vendors in the context of whether the vendor offers accommodations along with AEDTs.