

New York City Local Law 144 “Bias Audit” for HireVue for Think - Shapedance, Numerosity for All jobs

Conducted by DCI Consulting Group (DCI)

Analysis Information

- Summary produced on: July 5, 2023
- Data analyzed were based on nationwide applicants who were assessed between January 1, 2021 and December 31, 2022
- The assessment assigns applicants to one of three tiers (i.e., Bottom Tier, Middle Tier, Top Tier), yielding 2 threshold comparisons for analysis (i.e., the threshold between Top/Middle Tier and Bottom Tier and the threshold between Top Tier and Middle/Bottom Tier)

Purpose

The “bias audit” reported here is consistent with the use case wherein historical data from multiple employers using the same automated employment decision tool (AEDT) are used as the basis of the audit. This audit and report address the requirements of the New York City (NYC) Local Law 144 that regulates the use of AEDTs in accordance with the final rules published by the NYC Department of Consumer and Worker Protection (DCWP) on April 6, 2023.

About DCI Consulting Group (DCI)

DCI is a human resources consulting firm headquartered in Washington, D.C. Since 2001, DCI has provided expert solutions to hundreds of organizations on complex issues, with particular emphasis on equal employment opportunity analytics, employee selection and assessment, independent third-party reviews, and litigation support work. DCI's team of Industrial/Organizational Psychologists and Labor Economists are recognized for their applied experience in complex quantitative analytics, adverse impact measurement, pay equity, job analysis, validation research and job-relatedness evaluations, and routinely perform work in the context of affirmative action plans under the jurisdiction of the Department of Labor's Office of Federal Contract Compliance Programs compliance evaluations, Equal Employment Opportunity Commission systemic investigations, and expert witness work on matters related to Title VII, Executive Order 11246, the Age Discrimination in Employment Act, and the Americans with Disabilities Act.

“Bias Audit” Analysis Methodology ¹

The analyses conducted for this audit are based on data from multiple employers using the AEDT in one or more different implementations as part of their selection processes. Analyses were conducted separately for each employer's implementation(s) (hereafter these individual, or de-aggregated, analyses will be referred to as “by implementation”) and then results were aggregated to provide the tables in this report (referred to as “aggregated”). Before describing the aggregation process, a foundational understanding of the methodology used for analysis (related to a singular implementation of the AEDT by an employer) is required. As noted in the Analysis Information above, the AEDT assigns an applicant to a tier based on their performance. NYC's Local Law 144 and the rules published by the DCWP stipulate specific requirements for conducting the required analyses. Where the AEDT assigns applicants to tiers, an 'impact ratio' must be calculated for each demographic group for each threshold separating the tiers.² Note that NYC specifies this calculation to be the Focal Demographic Group selection rate divided by the Comparator Demographic Group selection rate. This analysis is conducted separately for each implementation of the AEDT in the dataset provided to DCI.

The law further specifies that the demographic groups need to be compared in three specific ways:

1. Gender comparison (i.e., Male, Female).
2. Race/ethnicity comparison (i.e., Hispanic or Latino, White, Black or African American, Native Hawaiian or Pacific Islander, Asian, Native American or Alaska Native, Two or More Races).
3. An intersectional comparison that is the combination of gender and race/ethnicity (e.g., Hispanic or Latino Male, Hispanic or Latino Female, White Male, White Female).

The NYC law impact ratio has been defined by the DCWP's published rules and is calculated as:

$$\text{NYC Law Impact Ratio} = \frac{\textit{selection rate of demographic (focal) group}}{\textit{selection rate of most selected (comparator) demographic group}}$$

Results Aggregation Methodology

For each AEDT implementation where sufficient data were available to analyze, the number of applicants, number of applicants selected, number of applicants not selected, selection rate, and impact ratio for each demographic group were calculated. These results were then aggregated to produce the tables in this report. To be able to aggregate results meaningfully across a range of implementations for the AEDT, there are a number of specific, nuanced issues that must be considered that are not required when conducting a bias audit in a singular implementation. These aggregation considerations and related decisions are as follows:

- Data were analyzed separately per implementation because the context around using the AEDT, the jobs for which they were used, the normative samples, and the composition of the specific applicant pools vary and cannot be assumed to be equivalent, nor can they be collapsed across implementations.
- Within an aggregation group, a single, consistent comparator group must be identified for all implementations of the AEDT to be able to produce interpretable aggregate impact ratios.
- Two factors are balanced when determining the aggregation comparator group: 1) selection rate and 2) statistical coverage. The comparator has the highest selection rate amongst those demographic groups with sufficient statistical coverage across implementations.³
- For all viable implementations analyzed in the aggregation group, aggregated values are calculated using recommended professional practices.^{4,5}

Results Tables

Aggregated results are presented in tables, each of which provides an indication of the demographic group (i.e., gender, race/ethnicity, or both), the aggregated number of applicants that comprise the demographic group, the aggregated selection rate for the demographic group, and the aggregated NYC law impact ratio. In each analysis table, the comparator group is identified. Please note that, due to the methods required to aggregate results, methods or analyses intended for singular implementations cannot be applied to the aggregated values in the table. Additionally, this means that the aggregated impact ratios reported in the tables cannot be computed directly from the aggregated selection rates appearing in the tables.

Finally, as specified by NYC for this law, each table contains a footnote specifying the number of applicants from the viable implementations analyzed for an aggregation group for whom demographic information is unavailable. Each page containing report tables also provides additional notes for the reader to bear in mind when viewing the results.

¹ A number of the requirements specific to NYC Local Law 144 are not aligned to contemporary adverse impact analysis practices (e.g., Morris and Dunleavy, *Adverse impact analysis: Understanding data, statistics, and risk*, 2017). However, these analyses were conducted as stipulated by NYC for the sole purpose of meeting the specific requirements of Local Law 144.

² Due to this balancing of factors, there may be some instances where aggregated impact ratios reported in a table will exceed 1.0.

³ Selection rates and impact ratios calculated for the tables in this report are based on the thresholds between tiers. This may or may not reflect employer-specific operational use of the AEDT with respect to making selection process decisions.

⁴ Sufficient data for a demographic group to be analyzed for an implementation requires that group comprise at least two-percent of the sample, and that there be at least three applicants above the threshold and three applicants below the threshold in the demographic group.

⁵ When aggregating the number of applicants, results from each implementation in the aggregation group are summed; when aggregating the selection rate, results from each implementation are averaged; when aggregating the impact ratio, results from each implementation analysis must first be converted to a natural logarithm, averaged, and then exponentiated to yield the average ratio value.

HireVue Aggregate “Bias Audit” Analysis for Think - Shapedance, Numerosity for All jobs

NYC Law Impact Ratios for Gender

Demographic Group	Number of Applicants	Selection Rate for Top + Middle Tier vs Bottom Tier	Impact Ratio for Top + Middle Tier vs Bottom Tier		Number of Applicants	Selection Rate for Top Tier vs Middle + Bottom Tier	Impact Ratio for Top Tier vs Middle + Bottom Tier
Male	316294	0.70	Comparator Group		316294	0.37	Comparator Group
Female	184157	0.64	0.92		184157	0.31	0.85

A cell with “—” indicates insufficient data to calculate this aggregate statistic.

Note: There were 4039 applicants with unknown or missing gender information for Top/Middle Tier vs Bottom Tier analyses; there were 4039 applicants with unknown or missing gender information for Top Tier vs Middle/Bottom Tier analyses; data from applicants with missing demographic data are not included in the calculations for this table.

NYC Law Impact Ratios for Race/Ethnicity

Demographic Group	Number of Applicants	Selection Rate for Top + Middle Tier vs Bottom Tier	Impact Ratio for Top + Middle Tier vs Bottom Tier		Number of Applicants	Selection Rate for Top Tier vs Middle + Bottom Tier	Impact Ratio for Top Tier vs Middle + Bottom Tier
Hispanic or Latino	84667	0.64	0.92		84689	0.31	0.89
White	282742	0.69	1.00		282885	0.35	Comparator Group
Black or African American	91361	0.60	0.87		91492	0.32	0.90
Native Hawaiian or Other Pacific Islander	0	—	—		0	—	—
Asian	5690	0.75	1.07		5712	0.36	1.10
Native American or Alaska Native	0	—	—		0	—	—
Two or More Races	15914	0.69	Comparator Group		15914	0.34	0.98

A cell with “—” indicates insufficient data to calculate this aggregate statistic.

Note: There were 9896 applicants with unknown or missing gender information for Top/Middle Tier vs Bottom Tier analyses; there were 9902 applicants with unknown or missing gender information for Top Tier vs Middle/Bottom Tier analyses; data from applicants with missing demographic data are not included in the calculations for this table.

Please note that, due to the methods required to aggregate results, methods or analyses intended for singular implementations cannot be applied to the aggregated values in the table. Additionally, this means that the aggregated impact ratios reported in the tables cannot be computed directly from the aggregated selection rates appearing in the tables.

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NYC Law Impact Ratios for the Combination of Gender and Race/Ethnicity

Demographic Group	Number of Applicants	Selection Rate for Top + Middle Tier vs Bottom Tier	Impact Ratio for Top + Middle Tier vs Bottom Tier		Number of Applicants	Selection Rate for Top Tier vs Middle + Bottom Tier	Impact Ratio for Top Tier vs Middle + Bottom Tier
Male Hispanic or Latino	56478	0.66	0.91		56478	0.32	0.87
Male White	177801	0.73	Comparator Group		177801	0.39	Comparator Group
Male Black or African American	54014	0.63	0.85		54014	0.33	0.87
Male Native Hawaiian or Other Pacific Islander	0	—	—		0	—	—
Male Asian	3757	0.68	1.00		3763	0.35	1.03
Male Native American or Alaska Native	0	—	—		0	—	—
Male Two or More Races	1487	0.73	1.01		1487	0.35	0.98
Female Hispanic or Latino	27768	0.61	0.84		27752	0.31	0.84
Female White	103588	0.64	0.88		103588	0.31	0.80
Female Black or African American	37261	0.58	0.79		37261	0.30	0.76
Female Native Hawaiian or Other Pacific Islander	0	—	—		0	—	—
Female Asian	1822	0.74	1.09		1838	0.40	1.18
Female Native American or Alaska Native	0	—	—		0	—	—
Female Two or More Races	133	0.66	0.87		125	0.33	0.84

A cell with “—” indicates insufficient data to calculate this aggregate statistic.

Note: There were 12218 applicants with unknown or missing gender information for Top/Middle Tier vs Bottom Tier analyses; there were 12218 applicants with unknown or missing gender information for Top Tier vs Middle/Bottom Tier analyses; data from applicants with missing demographic data are not included in the calculations for this table.

Please note that, due to the methods required to aggregate results, methods or analyses intended for singular implementations cannot be applied to the aggregated values in the table. Additionally, this means that the aggregated impact ratios reported in the tables cannot be computed directly from the aggregated selection rates appearing in the tables.