



REPORT NUMBER: A247-DISC-DISIMP-191009
ORIGINAL ISSUE DATE: October 10, 2019

EVALUATION CENTER
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RENDERED TO

Assessments 24x7
San Diego, CA

PRODUCT EVALUATED: DISC Assessment
EVALUATION PROPERTY: DISPARATE IMPACT

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2. Introduction

This document is provided as a tool for end-users of DISC Assessments to allow comparisons between the DISC Assessment and other four-dimensional models in the marketplace. This analysis examines the numerical properties of the assessment as they relate to EEO guidelines for Disparate Impact.

What is Disparate Impact? Employers often use tests and other selection procedures to screen applicants for hire and employees for promotion. The use of tests and other selection procedures can be a very effective means of determining which applicants or employees are most qualified for a job. However, use of these tools can also violate the federal anti-discrimination laws if they disproportionately exclude people in a protected group by race, sex, or another covered basis.

Importantly, the law does allow for selection procedures to select the best candidates based on job related requirements. If the selection procedure has a disparate impact based on race, color, religion, sex, or national origin, the employer is required to show that the selection **procedure is job-related and consistent with business necessity**. If discrimination exists, the challenged policy or practice should therefore be associated with the skills needed to perform the job successfully.

In order to determine discrimination of a protected class, a multitude of methods are available. The most prominent of these methods is the “**Four-Fifths**” rule. The four-fifths rule is a rule-of-thumb used as a general evaluation guideline. The EEOC has determined that a selection rate for any race, sex, or ethnic group which is **less than** four-fifths (4/5) (or eighty percent) of the rate for the group with the highest rate will generally be regarded by the Federal enforcement agencies as evidence of adverse or disparate impact. While a greater than four-fifths rate will generally not be regarded by Federal enforcement agencies as evidence of adverse impact, it should be noted however, that smaller differences in selection rate may nevertheless constitute adverse impact, where they are significant in both statistical and practical terms.

The purpose of this study is to apply the four-fifths rule to the DISC assessment data. Comparison ratios of mean scores by protected class will be made to determine if mean ratio values are greater than or less than the 80% guideline. Comparison of the protected class group are made against the other groups not in the specified protected class (the Control Group).

EEO Guidelines

According to EEOC Guidelines, “Each user should maintain and have available for inspection records or other information which will disclose the impact which its tests and other selection procedures have upon employment opportunities of persons by identifiable race, sex, or ethnic groups... in order to determine compliance.

APA Guidelines

Evaluation was conducted in accordance with the Standards for Educational and Psychological Testing; developed jointly by the American Educational Research Assn. (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME).

Evaluation Dates

- Data evaluation began October 2, 2019.
- Data evaluation was completed on October 10, 2019.

3. Test Data Preparation

3.1 SAMPLE SELECTION

Sample data was submitted to ASI directly from the client and were not independently selected for testing. Samples are requested to:

- Be a sufficient number to represent the general population.
- Be randomly selected.

The sample panels were received at the ASI Evaluation Center by email on October 1, 2019.

- **SAMPLE SIZE: N = 10,000 for all DISC Styles**

3.2 DATA CLEANING

Upon receipt of the samples at ASI, the data was downloaded and cleaned as follows:

1. **Missing Values** – There were no missing values.
2. **Duplicates** – Duplicate entries were removed if present.
3. **Categorization** – Data was categorized and labeled by attribute type and protected class for the appropriate comparison.

4. Testing and Evaluation Methods

TEST STANDARDS

Analysis of the data was conducted using the “Four Fifths Rule”. The statistical method employed was:

- Mean Ratio Comparison

Mean Ratio Comparison

In this analysis, a mean ratio is a comparison of two or more mean values that indicates their average values in relation to each other. The ratio compares the two averages by division, with the dividend or number being divided as the smaller term and the divisor or number that is divided as the larger term.

As part of the evaluation, the following calculations were used.

1. Arithmetic Mean (AM) - If n numbers are given, each number denoted by a_i (where $i = 1, 2, \dots, n$), the arithmetic mean is the sum of the a_i s divided by n or

$$AM = \frac{1}{n} \sum_{i=1}^n a_i = \frac{a_1 + a_2 + \dots + a_n}{n}$$

2. Standard Deviation – is a measure of the amount of variation or dispersion in the data set. A high standard deviation relative to the mean, indicates that the values are spread out over a wide range.

The formula used for standard deviation is:

$$s = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (x_i - \bar{x})^2},$$

3. Mean Ratio – The Mean Ratio was determined by comparing the protected class mean to the comparison group mean where the smallest number is the numerator and the largest mean is the denominator.

5. Testing and Evaluation Results

The tables below illustrate the results when gender orientation across respondents are compared against the Control Group. One can see that each of the categories are found to be within the acceptable limits for the four-fifths rule. Gender orientation is a protected category under the EEO guidelines.

DISC Findings by GENDER: Dominance Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	40.9	17.5		
Female	38.1	17.0	0.93	Yes
LGBTQ	41.5	15.1	0.99	Yes

DISC Findings by GENDER: Influencing Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	56.8	21.8		
Female	60.5	21.5	0.94	Yes
LGBTQ	60.9	20.1	.93	Yes

DISC Findings by GENDER: Steadiness Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	55.9	17.3		
Female	59.4	16.8	0.94	Yes
LGBTQ	53.6	17.1	0.96	Yes

DISC Findings by GENDER: Conscientious Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	56.9	18.6		
Female	54.3	19.1	0.95	Yes
LGBTQ	52.9	18.1	0.93	Yes

The tables below illustrate the results when ethnicities of various categories are compared against the Control Group. One can see that each of the categories are found to be within the acceptable limits for the four-fifths rule.

DISC Findings by ETHNICITY: Dominant Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	39.6	15.5		
African American	40.3	14.6	0.98	Yes
Asian	37.28	15.9	0.94	Yes
Hawaiian or Pacific Islander	39.6	16.8	1.00	Yes
Latino or Hispanic	40.8	16.9	0.97	Yes
Middle Eastern	41.6	17.2	0.95	Yes
Native American	42.2	17.6	0.94	Yes

DISC Findings by ETHNICITY: Influencing Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	61.1	22.1		
African American	60.6	19.6	.99	Yes
Asian	53.8	21.3	0.88	Yes
Hawaiian or Pacific Islander	58.6	23.2	0.96	Yes
Latino or Hispanic	60.1	20.6	.99	Yes
Middle Eastern	57.1	22.7	0.94	Yes
Native American	60.54	19.5	0.99	Yes

DISC Findings by ETHNICITY: Steadiness Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	58.2	17.9		
African American	55.6	15.4	0.95	Yes
Asian	59.6	16.5	0.98	Yes
Hawaiian or Pacific Islander	58.1	15.1	1.00	Yes
Latino or Hispanic	56.2	16.4	0.97	Yes
Middle Eastern	56.2	16.4	0.97	Yes
Native American	58.7	16.1	0.99	Yes

DISC Findings by ETHNICITY: Conscientious Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	53.2	19.9		
African American	53.8	16.9	0.99	Yes
Asian	60.7	17.0	0.88	Yes
Hawaiian or Pacific Islander	54.7	20.1	0.97	Yes
Latino or Hispanic	53.5	18.4	0.99	Yes
Middle Eastern	56.9	19.5	0.93	Yes
Native American	54.5	18.6	0.98	Yes

The tables below illustrate the results when age groups of various categories are compared against the Control Group. One can see that each of the categories are found to be within the acceptable limits for the four-fifths rule.

DISC Findings by AGE: Dominance Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Under 40	38.9	16.74		
Born Before 1945	36.7	12.1	0.94	Yes
Baby Boomer 1946 to 1964	38.8	18.1	0.99	Yes
Generation X 1965 to 1980	40.6	18.6	0.96	Yes

DISC Findings by AGE: Influencing Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Under 40	58.9	21.5		
Born Before 1945	59.9	16.33	0.98	Yes
Baby Boomer 1946 to 1964	60.5	22.5	0.97	Yes
Generation X 1965 to 1980	59.1	18.6	0.99	Yes

DISC Findings by AGE: Steadiness Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Under 40	57.9	16.9		
Born Before 1945	56.7	12.5	0.98	Yes
Baby Boomer 1946 to 1964	59.6	17.7	0.97	Yes
Generation X 1965 to 1980	57.6	17.6	0.99	Yes

DISC Findings by AGE: Conscientious Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Under 40	55.9	18.6		
Born Before 1945	59.4	16.8	0.94	Yes
Baby Boomer 1946 to 1964	52.9	19.9	0.94	Yes
Generation X 1965 to 1980	53.8	19.8	0.96	Yes

The tables below illustrate the results when Veterans of various categories are compared against the Control Group. One can see that each of the categories are found to be within the acceptable limits for the four-fifths rule.

DISC Findings by VETERAN or DISABLED Status: Dominant Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	39.1	17.2		
Disabled	36.4	13.7	0.93	Yes
Disabled Veteran	48.3	17.9	0.81	Yes
Other Veteran	44.3	17.9	0.88	Yes
Vietnam Veteran	36.9	16.2	0.95	Yes

DISC Findings by VETERAN or DISABLED Status: Influencing Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	59.2	21.7		
Disabled	57.6	22.0	0.97	Yes
Disabled Veteran	53.9	21.3	0.91	Yes
Other Veteran	55.8	22.3	0.94	Yes
Vietnam Veteran	60.1	18.6	0.99	Yes

DISC Findings by VETERAN or DISABLED Status: Steadiness Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	58.14	17.1		
Disabled	58.8	13.9	0.99	Yes
Disabled Veteran	51.4	17.2	0.88	Yes
Other Veteran	53.9	16.2	0.93	Yes
Vietnam Veteran	55.4	12.5	0.95	Yes

DISC Findings by VETERAN or DISABLED Status: Conscientious Style

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	55.3	19.0		
Disabled	58.2	17.9	0.95	Yes
Disabled Veteran	52.7	16.3	0.95	Yes
Other Veteran	54.3	19.3	0.98	Yes
Vietnam Veteran	61.6	14.6	0.90	Yes

6. Conclusions

The DISC data submitted for investigation was evaluated by DISC style attribute and by protected class using mean ratios. All the calculated ratios passed the “Four-Fifths” guideline. This is an important finding for the principals of Assessments 24x7. It is also important for the clients of Assessments 24x7 to be aware of as they move forward in their use of the suite of Assessments 24x7 products for future activity.

The Assessment Standards Institute has found no Four-Fifth's data that is outside the 80% ratio guideline resulting in an adverse impact to any protected group, whether gender, ethnicity, disability, or veterans' status. The assessment is therefore awarded ASI Certification for compliance with the EEOC Disparate Impact guidelines based on the Four-Fifth's analysis procedure.

Certified
October 10, 2019



7.Document Review

ASI TESTING SERVICES

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