



**REPORT NUMBER: A247-MOT-DISIMP-191110**  
**ORIGINAL ISSUE DATE: November 10, 2019**

**EVALUATION CENTER**  
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**RENDERED TO**

**Assessments 24x7**  
**San Diego, CA**

**PRODUCT EVALUATED:** Motivators Assessment  
**EVALUATION PROPERTY:** DISPARATE IMPACT

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## 2. Introduction

This analysis examines the numerical properties of the Motivators 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 Motivators 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 30, 2019.
- Data evaluation was completed on November 7, 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 30, 2019.

- **SAMPLE SIZE: N = 66,895 for all Motivators**

### 3.2 DATA CLEANING

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

1. **Missing Values** – 20,835 rows with missing attributes were removed.
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.

### Motivator Findings by GENDER: Theoretical

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	54.2	16.1		
Female	48.3	14.9	0.89	Yes
LGBTQ	52.8	15.9	0.97	Yes

### Motivator Findings by GENDER: Economic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	58.7	18.3		
Female	50.1	18.5	0.85	Yes
LGBTQ	48.0	19.7	0.82	Yes

## Motivator Findings by GENDER: Individualistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	51.0	15.4		
Female	55.2	15.6	0.92	Yes
LGBTQ	57.7	15.8	0.88	Yes

## Motivator Findings by GENDER: Altruistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	43.5	17.7		
Female	53.5	18.5	0.81	Yes
LGBTQ	50.2	19.9	0.87	Yes

## Motivator Findings by GENDER: Political

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	54.7	16.5		
Female	49.0	16.5	0.90	Yes
LGBTQ	47.5	17.5	0.87	Yes

## Motivator Findings by GENDER: Regulatory

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	44.1	15.5		
Female	43.8	15.9	0.99	Yes
LGBTQ	40.9	15.6	0.93	Yes

## Motivator Findings by GENDER: Aesthetic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Male	40.4	17.0		
Female	46.8	17.2	0.86	Yes
LGBTQ	49.7	17.6	0.81	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.

### Motivator Findings by ETHNICITY: Theoretical

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	51.8	15.9		
African American	44.2	14.2	0.85	Yes
Asian	51.2	15.3	0.99	Yes
Hawaiian or Pacific Islander	49.0	15.5	0.95	Yes
Latino or Hispanic	48.3	15.2	0.93	Yes
Middle Eastern	52.2	15.3	0.99	Yes
Native American	49.9	15.4	0.96	Yes
Other	50.1	15.3	0.97	Yes

## Motivator Findings by ETHNICITY: Economic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	51.0	19.7		
African American	59.5	16.7	0.86	Yes
Asian	55.2	17.9	0.93	Yes
Hawaiian or Pacific Islander	52.4	17.6	0.97	Yes
Latino or Hispanic	55.8	17.7	0.92	Yes
Middle Eastern	53.4	18.1	0.96	Yes
Native American	50.4	18.0	0.99	Yes
Other	52.8	17.9	0.97	Yes

## Motivator Findings by ETHNICITY: Individualistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	55.2	15.5		
African American	53.5	15.8	0.97	Yes
Asian	51.2	15.4	0.93	Yes
Hawaiian or Pacific Islander	53.9	16.1	0.98	Yes
Latino or Hispanic	52.0	15.6	0.94	Yes
Middle Eastern	53.3	16.3	0.97	Yes
Native American	53.7	15.7	0.97	Yes
Other	54.1	15.9	0.98	Yes

## Motivator Findings by ETHNICITY: Altruistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	51.0	19.5		
African American	52.2	17.4	0.98	Yes
Asian	46.2	18.1	0.90	Yes
Hawaiian or Pacific Islander	51.9	17.5	0.98	Yes
Latino or Hispanic	49.6	18.3	0.97	Yes
Middle Eastern	47.4	17.7	0.93	Yes
Native American	51.3	18.1	0.99	Yes
Other	49.5	18.1	0.97	Yes

## Motivator Findings by ETHNICITY: Political

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	49.3	17.1		
African American	53.9	15.3	0.91	Yes
Asian	52.3	16.3	0.94	Yes
Hawaiian or Pacific Islander	50.8	15.8	0.97	Yes
Latino or Hispanic	53.9	16.3	0.91	Yes
Middle Eastern	53.4	16.1	0.92	Yes
Native American	51.6	16.2	0.96	Yes
Other	51.5	16.3	0.96	Yes

## Motivator Findings by ETHNICITY: Regulatory

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	43.6	16.4		
African American	43.0	15.2	0.99	Yes
Asian	44.7	14.5	0.97	Yes
Hawaiian or Pacific Islander	43.5	16.4	1.00	Yes
Latino or Hispanic	44.7	15.6	0.97	Yes
Middle Eastern	41.8	14.8	0.96	Yes
Native American	44.0	16.5	0.99	Yes
Other	43.3	15.4	0.99	Yes

## Motivator Findings by ETHNICITY: Aesthetic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Caucasian	44.7	18.1		
African American	40.4	15.9	0.90	Yes
Asian	45.9	16.9	0.97	Yes
Hawaiian or Pacific Islander	45.2	15.8	0.99	Yes
Latino or Hispanic	42.5	16.6	0.95	Yes
Middle Eastern	45.2	17.0	0.99	Yes
Native American	45.7	16.8	0.98	Yes
Other	45.5	16.7	0.98	Yes

The tables below illustrate the results when age groups of various **AGE 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.

### Motivator Findings by GENERATION: Theoretical

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Born Before 1945	49.4	13.6	0.96	Yes
Baby Boomer 1946 to 1964	50.8	15.3	0.99	Yes
Generation X 1965 to 1980	50.0	15.3	0.97	Yes
Generation Y 1977 - 1995	50.7	15.7		
Generation Z 1996 and later	51.0	16.0		

### Motivator Findings by GENERATION: Economic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Born Before 1945	52.7	14.8	1.00	Yes
Baby Boomer 1946 to 1964	52.9	18.9	0.99	Yes
Generation X 1965 to 1980	53.5	18.7	0.98	Yes
Generation Y 1977 - 1995	53.8	19.0		
Generation Z 1996 and later	51.6	18.9		

## Motivator Findings by GENERATION: Individualistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Born Before 1945	46.8	14.6	0.88	Yes
Baby Boomer 1946 to 1964	55.1	15.2	0.97	Yes
Generation X 1965 to 1980	54.4	15.7	0.98	Yes
Generation Y 1977 - 1995	53.6	15.8		
Generation Z 1996 and later	53.0	15.5		

## Motivator Findings by GENERATION: Altruistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Born Before 1945	51.5	15.5	0.97	Yes
Baby Boomer 1946 to 1964	51.6	18.7	0.96	Yes
Generation X 1965 to 1980	50.2	18.8	0.99	Yes
Generation Y 1977 - 1995	48.8	18.9		
Generation Z 1996 and later	50.7	18.9		

## Motivator Findings by GENERATION: Political

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Born Before 1945	49.9	14.8	0.97	Yes
Baby Boomer 1946 to 1964	47.9	16.6	0.93	Yes
Generation X 1965 to 1980	50.4	16.9	0.98	Yes
Generation Y 1977 - 1995	51.8	16.7		
Generation Z 1996 and later	51.2	16.7		

## Motivator Findings by GENERATION: Regulatory

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Born Before 1945	47.6	12.5	0.92	Yes
Baby Boomer 1946 to 1964	42.8	16.1	0.98	Yes
Generation X 1965 to 1980	44.4	16.5	0.97	Yes
Generation Y 1977 - 1995	43.6	15.7		
Generation Z 1996 and later	44.0	14.6		

## Motivator Findings by GENERATION: Aesthetic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Born Before 1945	48.8	15.9	0.92	Yes
Baby Boomer 1946 to 1964	45.6	17.2	0.98	Yes
Generation X 1965 to 1980	43.8	17.4	0.98	Yes
Generation Y 1977 - 1995	44.3	17.3		
Generation Z 1996 and later	45.2	17.8		

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.

## Motivator Findings by VETERAN or DISABLED Status: Theoretical

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	50.5	15.7		
Disabled	53.3	14.2	0.95	Yes
Disabled Veteran	52.1	16.6	0.97	Yes
Other Veteran	52.5	15.6	0.96	Yes
Vietnam Veteran	53.6	14.8	0.94	Yes

## Motivator Findings by VETERAN or DISABLED Status: Economic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	53.2	18.9		
Disabled	50.0	16.5	0.94	Yes
Disabled Veteran	55.1	18.5	0.97	Yes
Other Veteran	55.7	18.7	0.96	Yes
Vietnam Veteran	52.9	16.2	0.99	Yes

## Motivator Findings by VETERAN or DISABLED Status: Individualistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	53.8	15.6		
Disabled	52.3	15.9	0.97	Yes
Disabled Veteran	51.9	15.8	0.97	Yes
Other Veteran	51.1	15.7	0.95	Yes
Vietnam Veteran	49.9	16.1	0.93	Yes

## Motivator Findings by VETERAN or DISABLED Status: Altruistic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	53.8	15.6		
Disabled	52.3	15.9	0.97	Yes
Disabled Veteran	51.9	15.8	0.97	Yes
Other Veteran	51.1	15.7	0.95	Yes
Vietnam Veteran	49.9	16.1	0.93	Yes

## Motivator Findings by VETERAN or DISABLED Status: Political

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	51.0	16.7		
Disabled	47.0	16.0	0.92	Yes
Disabled Veteran	53.2	16.8	0.96	Yes
Other Veteran	53.6	16.5	0.95	Yes
Vietnam Veteran	49.1	14.9	0.96	Yes

## Motivator Findings by VETERAN or DISABLED Status: Regulatory

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	43.7	15.7		
Disabled	43.9	14.5	1.00	Yes
Disabled Veteran	46.8	15.8	0.93	Yes
Other Veteran	46.6	16.5	0.94	Yes
Vietnam Veteran	45.2	13.1	0.97	Yes

## Motivator Findings by VETERAN or DISABLED Status: Aesthetic

Source	Mean	Standard Deviation	Ratio	Greater than 80% = Pass
Non-Veteran or Non-Disabled	44.6	17.4		
Disabled	48.6	17.4	0.92	Yes
Disabled Veteran	39.5	17.2	0.89	Yes
Other Veteran	39.2	17.1	0.88	Yes
Vietnam Veteran	47.9	18.1	0.93	Yes

## 6. Conclusions

The Motivators data submitted for investigation was evaluated by Motivator 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**  
November 10, 2019



## 7.Document Review

### ASI TESTING SERVICES

Signed:

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Signed:

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