

TWO METHODS FOR ASSESSING UNDERUTILIZATION: WHY, WHAT, AND HOW

WHAT IS UNDERUTILIZATION AND WHY MUST SPONSORS ASSESS THE SIGNIFICANCE OF DISPARITIES IN UTILIZATION?

A central premise underlying affirmative action is that, absent discrimination, over time a sponsor's apprenticeship program, generally, will reflect the sex, race, ethnicity, and disability profile of the labor pools from which the sponsor recruits and selects. As part of their Affirmative Action Programs (AAPs), sponsors assess whether possible barriers to apprenticeship exist for particular groups of individuals by determining whether the race, sex, and ethnicity of apprentices in their program is reflective of persons available for apprenticeship by race, sex, and ethnicity in their relevant recruitment area.¹ If there is a significant disparity between the utilization and availability for women, Hispanics or Latinos, or a particular racial minority group, the sponsor must adopt a utilization goal for that group in its apprenticeship program. The "significance" requirement distinguishes between disparities that occur within a tolerance level and those that are greater than would reasonably be expected given the availability of eligible individuals from the population group.

That's why assessing the statistical significance of any disparity between a gender, racial, or ethnic group's utilization and its availability is a key step in the AAP process.

WHAT ARE THE METHODS FOR ASSESSING UNDERUTILIZATION?

While sponsors may choose any "appropriate" method of statistical analysis to assess the significance of disparities, the two most commonly used are **the 80% (or four-fifths) rule** and **the two standard deviations statistical test**. These two methods are specifically endorsed as "appropriate" in the Preamble to the 2016 update to the Apprenticeship EEO regulations.

- **The 80% rule** determines if utilization is below 80% of that group's availability. The 80% rule's application here is derived from that contained in the Uniform Guidelines on Employee Selection Procedures (UGESP). According to the UGESP, 41 CFR § 60-3.4(D), *"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 impact."* The UGESP are explicitly incorporated into the Apprenticeship EEO regulations by 29 CFR § 30.10.
- **The two standard deviations method** determines if utilization is more than two standard deviations below availability. If so, the difference between them is considered "significant."

Two standard deviations is a statistical computation that predicts the likelihood of an outcome – in this case, the outcome of utilization being less than availability. Its use

¹ Sponsors also measure the utilization for individuals with disabilities in their programs, but this is compared to a national 7% utilization goal that is established by the Office of Apprenticeship, rather than to the availability in the sponsor's specific recruitment area.

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for assessing employment discrimination was endorsed by the Supreme Court in Hazelwood School Dist. v. United States, 433 U.S. 299, 308-309 n.14 (1977).

NOTE: Whatever method the sponsor chooses, it must apply the same method to assess the significance of disparities for each gender, racial, and ethnic group. For example, a sponsor cannot use the 80% rule to assess the disparity for African Americans but the two standard deviations test to assess the disparity for women.

HOW CAN WE DO THESE CALCULATIONS?

1. The Department's Demographic Analysis Tool (DAT) automatically calculates disparities using the 80% rule for all programs. If a program has 30 or more apprentices, the DAT also automatically calculates statistical significance using the two standard deviations method.

Sponsors who choose not to use the automated approach to computing disparities offered by the DAT may instead elect to perform the necessary calculations manually on their own, or with the assistance of a professional with expertise in statistical analysis. However, as these calculations are complex, we strongly encourage program sponsors to consider using the DAT to reduce administrative burdens and ensure mathematical accuracy.

2. For a program that cannot use the DAT (for example, if a program recruits apprentices only from its incumbent workforce), manually compute using the following formulas:

- a. The 80% rule.

Calculate the ratio of the utilization of the group to their availability.

Steps:

1. Calculate the number of apprentices from each race/sex/ethnic group in each major occupation group in your program.
2. Determine what percentage that race/sex/ethnic group comprises of the total number of apprentices in the major occupation (e.g., if you have 10 total apprentices and 2 are women, 20 percent of your apprenticeship workforce in that major occupation group is female).
3. Compare this percentage to the percentage of that race/sex/ethnicity in the relevant recruitment area (so, here, 20 percent compared to, say 50 percent in the recruitment area).
4. If the percent in your program is less than 80 percent of the availability, you have a disparity (here, 20 percent of 50 percent = 40 percent, which is less than the 80 percent threshold).

- b. Two standard deviation method.

The mathematical formulation for calculating the standard deviation is the square root of the product of the availability (A) of a group (expressed as a fraction) times one minus that availability (1-A), multiplied by the total number of apprentices in the workforce (N).

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Steps:

1. 'A' equals the percentage availability of a group, and
2. 'N' equals the number of apprentices in the sponsor's program --
 - standard deviation = $\sqrt{A*(1-A)*N}$
 - two standard deviations = $2 * (\sqrt{A*(1-A)*N})$

IS THERE A CALCULATION EXAMPLE?

Using the following data:

	total #	# female	% female
Individuals in apprenticeship program (utilization)	100	20	20%
Eligible individuals in relevant recruitment area availability	1000	600	60%

a. 80% Method

Utilization = 20%

Availability = 60%

Ratio of utilization to availability = $20\% / 60\% = 33\%$

Since 33% is less than 80%, this demonstrates underutilization under the 80% Rule.

b. Two Standard Deviation Method

Steps:

1. Calculate $A*(1-A)*N$. That is, multiply A by 1-A, and then multiply that product by N.

In this example: $A = .6$; $1-A = .4$; and $N = 100$.

So $A*(1-A)*N = .6*(1-.6)*100 = 24$.

2. Find the square root of this product; this is one standard deviation.

In this example: the square root of 24 is 4.9.

3. Double the square root; this is two standard deviations.

In this example: $4.9*2 = 9.8$.

4. Calculate the expected number of apprentices from the relevant race/sex/ethnic group by multiplying their percentage availability (A) by the total number of apprentices in their program (N).

In this example: $A = 60\%$ and $N = 100$.

So $A*N = 60\% * 100 = 60$.

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Thus, here, the expected number of female apprentices is 60.

5. Subtract the number of female apprentices in the program from the expected number of female apprentices.

In this example: $60 - 20$, or 40.

6. If this difference is greater than two standard deviations, there is underutilization.

In this example: 40 is greater than 9.8.

Since 40 is greater than 9.8, this disparity is significant under the two standard deviations methodology.