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## A Primer on Adverse Impact Analysis

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The concept of adverse impact is likely familiar to employers who have complied with Title VII of the Civil Right Act of 1964. In this context, adverse impact refers to substantial differences in employment decision rates between groups (UGESP, 1978). In situations where a specific selection procedure causes adverse impact, the employer must conduct research to defend the selection procedure that caused the impact and/or consider alternatives to that procedure. Of course, analyses comparing employment rates between two groups can also be used as evidence in disparate treatment pattern or practice cases, particularly when selection processes are unstructured and highly subjective. Regardless of whether an allegation of discrimination is intentional or unintentional, disparities in employment decision rates can be the foundation of high profile class action lawsuits.

Recently the issue of adverse impact has received substantial attention from federal contractors that must comply with Executive Order 11246. In this context, adverse impact analyses are conducted on personnel data (i.e., hiring, promotions, terminations, etc.) submitted as part of an Affirmative Action Plan.

Both the Equal Employment Opportunity Commission (EEOC) and the Office of Federal Contract Compliance Programs (OFCCP) have recently invested substantial resources in failure-to-hire cases where disparities in selection were the focus. For example, in 2007 the EEOC published guidance on a variety of EEO considerations related to employee selection and testing that included a significant amount of information related to disparate impact issues<sup>1</sup>. Further,

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<sup>1</sup> In 2007 the EEOC published guidance on EEO considerations in employment testing and selection, which can be found at: [http://www.eeoc.gov/policy/docs/factemployment\\_procedures.html](http://www.eeoc.gov/policy/docs/factemployment_procedures.html).

the OFCCP has earned a vast majority of settlement remedies for victims of discrimination in hiring cases where analyses comparing hiring rates of two groups were apparently the probative evidence of systemic discrimination (Cohen & Dunleavy, 2009). This strategy represents a radical shift from addressing areas of underutilization and good-faith efforts as the agency had traditionally done in the past. In fact, in the vast majority of OFCCP settlements, adverse impact from applicant flow data was used as evidence of discrimination, regardless of good-faith efforts and workforce utilization above availability. As such, adverse impact analyses in the Affirmative Action Plan deserve more attention in the current EEO landscape.

Given this context, an understanding of adverse impact analyses is valuable to federal contractors; this understanding would allow contractors to identify any potential problem areas and manage the risk before they get into costly conciliation or litigation. With this goal in mind, this paper focuses on an overview of required applicant-to-hire analyses in the context of Affirmative Action. We first define adverse impact and review legislative history and important case law. Next, we present a brief overview of the different adverse impact statistics that employers can consider for analysis of their Affirmative Action Plan data, and recommend a general approach. We conclude with an introduction to data management for adverse impact analyses, and preview some cutting edge issues that are developing in the OFCCP enforcement environment.

This is the first in a series of white papers written for the federal contractor community, and as such we hope that this paper can serve as a starting point upon which employers will build their expertise in many areas of Affirmative Action. Other papers in this series deal with particular topics (e.g., disposition codes, statistical significance, practical significance, etc.) in more detail.

## ***HISTORICAL BACKGROUND***

The history of adverse impact indirectly dates back to the Title VII of the Civil Rights Act of 1964, which Executive Order 11246 mirrors in many respects. Title VII prohibits discrimination based on race, color, religion, sex, or national origin and made it illegal for employers to discriminate based upon protected characteristics regarding terms, conditions, and privileges of employment. It also created the EEOC as an enforcement agency of Title VII. One year later, President Lyndon B. Johnson signed Executive Order 11246, which required Equal Employment Opportunity. It prohibited federal contractors from discriminating and required to develop an Affirmative Action Plan. Its enforcement now resides in the OFCCP. However, both of these laws specifically focused on intentional discrimination, and did not consider unintentional and indirect discrimination in the form of organizational policies and procedures that may produce substantial disparities against protected groups. Instead, the notion of adverse impact was initially codified in actual case law.

*Griggs v. Duke Power Co.* (1971) was the first major case that addressed the concept of adverse impact. In this case plaintiffs challenged a transfer policy requiring high school education and minimum scores on two aptitude tests for employees who want to work outside of its lowest paying Labor department. The Supreme Court found that the employer “operated to disqualify blacks at a substantially higher rate than white applicants” with requirements that are not a “reasonable measure of job performance.” In essence, the Supreme Court created a two-phase process for establishing a prima facie case under the disparate impact model. The first phase requires some statistical evidence that a facially neutral practice disqualifies members of a protected class at a meaningfully different rate than members of another group. If this phase is met, the employer must demonstrate that the practice that caused a substantial disparity is “job-related for the position in question and consistent with business necessity.” Unlike disparate treatment cases, there is no need to prove the discriminatory “intent” of the employers in adverse impact cases.

Additionally, consideration of an alternative selection procedure instead of the selection procedure that caused the adverse impact, even if that procedure is job-related, was also developed via case law. This concept was first introduced in the Supreme Court case *Albemarle Paper Company v. Moody* (1975). The court ruled that reasonable alternatives which cause less impact should be evaluated for use in selection, otherwise, the employer may be considered liable for systemic discrimination even if a selection procedure is related to the job.

Following the *Griggs* and *Albemarle* cases, a joint committee including EEOC, the Department of Justice (DOJ), and the Department of Labor (DOL) published the Uniform Guidelines on Employee Selection Procedures (UGESP) in 1978.<sup>2</sup> Although not legally binding, the UGESP have enjoyed proper deference by courts as the primary guideline in judging employment discrimination cases. Section 4 of the UGESP provides specific information on impact. For example, impact is defined as a “substantially different rate of selection”. Further, UGESP requires that selection rates be compared between the group with the highest selection rate and specific subgroups, as long as those groups make up at least 2% of the labor or applicant pool. Additionally, this section states that if “the total selection process for a job has an adverse impact, the individual components of the selection process should be evaluated for adverse impact”.

Moreover, UGESP added the third phase of impact investigation (reasonable alternatives) under the disparate impact model. Specifically, Section 6 of the UGESP states “A user may choose to utilize alternative selection procedures in order to eliminate adverse impact or as part of an affirmative action program. Such alternative procedures should eliminate the adverse impact in the total selection process, should be lawful and should be as job related as possible.” The concept was later codified by the Civil Rights Act of 1991. As a part of a validity study,

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<sup>2</sup> We recommend that clients interested in the detailed legal standards of adverse impact analysis take a look at the UGESP, which are publically available at <http://www.uniformguidelines.com/>

employers need to demonstrate consideration of other alternative selection methods that are both valid and have less adverse impact (41 CFR 60-3.3 B).

### ***ADVERSE IMPACT MEASUREMENT***

As described in the Griggs standard, establishing a prima facie case under Title VII first requires a statistical demonstration that an employment policy or practice caused a “substantial” disparate impact on members of a protected group. Two frequently used methods to determine adverse impact are statistical significance tests and practical significance tests.

#### Statistical Significance Tests

A *z-test of independent proportions*, often called the ‘2 standard deviation’ test, is a statistical technique that translates the probability of a *difference* in selection rates into the metric of standard deviations. It is an estimator test based on large samples that approximates the precise probability value of a difference in rates. Many court cases as well as the OFCCP have adopted the enforcement standard of two (2.00) or more standard deviations as an indication of statistical significance in employment discrimination cases<sup>3</sup>. Statistically speaking, the result of greater than two standard deviations demonstrates that the disparity in selection rates is likely to occur by chance less than five percent of time.

One alternative to the *z-test* is the Fisher’s Exact Test (FET), which calculates the exact probability that the observed selection rate difference or any difference more extreme would have occurred if applicants from each group were randomly selected. This statistic is generally used by enforcement agencies when sample sizes are small (e.g., less than 30), although some statisticians recommend that FET is more appropriate regardless of sample size.<sup>4</sup> Other statisticians disagree, and suggest that FET may be somewhat conservative.

#### Practical Significance Tests

It is important to keep in mind that a disparity likely not due to chance does not automatically mean a disparity is large. In fact, statistical significance testing focuses on the precision of results, and not to the magnitude of disparity. This is especially true when interpreting results from large sample sizes. Small differences in selection rates can easily lead to statistically significant findings simply because of the large sample size.

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<sup>3</sup> *Hazelwood School District v. United States (1977); Castaneda v. Partida (1977).*

<sup>4</sup> *Please refer to the white paper on statistical significance testing in this series for more a more complete review of statistical significance tests.*

On the other hand, a hasty interpretation of a finding of no adverse impact should be also reconsidered when sample sizes are small. Small samples are often sensitive to changes in outcomes that flipping one applicant from “rejected” to “selected” can drastically change results. For this reason, the context should be considered to determine the adequacy of the statistical conclusion. One way to consider the context is, as the UGESP suggests, assessing the results in both statistical and practical terms<sup>5</sup> (41 CFR 60-3.4 D).

The UGESP endorse the four-fifths (or 80%) rule, which compares the passing rate<sup>6</sup> of one group to the passing rate of another group (e.g. males vs. females) via a ratio and considers any value less than 80% as a red flag deserving closer scrutiny. For example, let us assume that we have 100 applicants that applied for a Customer Service Representative position and the organization hired 41 individuals for the position; 40 of the hires were White applicants, and 1 hire was Asian. The following table serves as an example:

Group	Applicants	Hires	Selection Rate
<b>White</b>	80	40	40 hires out of 80 applicants = <b>50%</b>
<b>Asian</b>	20	1	1 hire out of 20 applicants = <b>5%</b>
<b>Totals</b>	100	41	41 hires out of 100 applicants = <b>41%</b>

According to the 80% rule, Asian applicants should be hired at least 80% of the selection rate of the White applicants. In this case, the selection ratio of White applicants was 50%. 80% of the 50% selection rate (80% rule x 50% selection ratio) is 40%. The 40% represents the selection rate that Asian applicants would need to be hired at to meet the 4/5<sup>th</sup> or 80% rule. However, in this case, the selection ratio of Asian applicants is 5%, which does not meet the 40% selection ratio, and thus fails to pass the needed threshold (i.e., the impact ratio is 5%/50% = 10%).

Since the 80% rule tends to be less complicated to calculate and utilize as compared with significance tests, it gained popularity and was widely used immediately after UGESP were published. However, the 4/5<sup>th</sup> rule was developed in a pre-computer era, and does not use probability computations to determine whether or not the disparities were likely due to chance. Unfortunately, UGESP do not discuss any other practical significance tests (other than a flip-flop rule) in the adverse impact context. Conflicting definitions of practical significance exist in case law, including but not limited to the 80% rule, the shortfall, the actual difference in selection rates, and various flip-flop rules. Recognizing the complexity of defining practical significance, we saved a more detailed consideration of this topic for another white paper.

<sup>5</sup> In this context practical significance generally concerns whether the magnitude of disparity is large enough for the legal and scientific communities to be concerned.

<sup>6</sup> Note the flexible use of ‘employment decision rates’ in the data analytic context. Rates may represent hires, job offers, promotions, terminations, etc., which are dichotomous outcomes.

## Which Statistics Should Employers Use?

A subsequent white paper in this series will go into more detail about the appropriate combination of analyses federal contractors should utilize from a practical and scientific approach. However, general guidance from a scientist-practitioner perspective suggests that a combination of statistical (e.g., Standard Deviation or Fisher's exact test) and practical (e.g., 80% rule) significance tests will provide the most accurate understanding of whether adverse impact exists and is meaningful. For this reason we suggest that, in most circumstances, a practical significance measure like the 80% rule is best utilized in conjunction with a statistical significance test such as the Standard Deviation or Fisher's Exact Tests. This combination of measurement perspectives captures the precision of the analysis and the importance of the difference in the context of the legal and scientific communities.

### ***ADVERSE IMPACT CONSIDERATIONS***

This section highlights a few of the important issues to consider when conducting adverse impact in the context of Affirmative Action.

#### Units of analysis

Determining what grouping is used as the basic unit of analysis is also an important decision for impact analyses. Inappropriate aggregation of data can artificially inflate or mask adverse impact. At the same time, extreme disaggregation of the data makes the data sets so small that meaningful statistical analysis is almost impossible. Employers should examine the selection processes and choose the proper analytical framework that closely mirrors the actual processes. Fortunately, there are statistical (e.g., Breslow-Day and Mantel-Haenszel statistics) and theoretical factors to consider in making aggregation decisions. In general, employees who have similar responsibilities and opportunities for advancement would be grouped together in the same job group in the Affirmative Action Plan. Job titles are a good starting point in grouping individuals for adverse impact analyses, but may require further refinement in some circumstances.

#### Step By Step Analysis

When adverse impact is identified in a selection process, individual components of the selection process causing the adverse impact should be evaluated (41 CFR 60-3.4 C). The focus is to identify the point at which applicants were eliminated from the process. The particular policy or practice causing the adverse impact must be identified unless the elements of the employer's decision-making process cannot be separated, in which case the decision-making process can usually be analyzed as one un-standardized employment practice.

## Who is included in the analyses?

As described above, adverse impact analyses compare selection rates between the qualified applicants. Although traditionally the analysis compares previously disadvantaged groups (i.e., women and minorities to previously favored groups (i.e., males and non-minorities), the UGESP state that an adverse impact comparison should compare the highest selected group to other groups. In OFCCP enforcement, recent settlements have identified Hispanics and women as the highest selected group, and thus identified non-traditional victims of discrimination under EO 11246 (Cohen & Dunleavy, 2009).

In some instances one racial/ethnic subgroup has been compared to all others in recent OFCCP enforcement. However, UGESP are clear that separate groups should be analyzed in most situations, It is important to reiterate that Affirmative Action Plans emphasize historically disadvantaged groups for another reason. Specifically, in many cases the selection rate of minorities is compared to non-minorities (whites). In fact, many recent OFCCP settlements have identified an aggregated ‘minority group’ as the alleged victim of discrimination. Under this approach, employers sometimes encounter a situation where the selection rates of an aggregate minority group are substantially lower than that of non-minorities. Although this finding may present possible barriers to EEO, this alone does not establish evidence of discrimination. Since a protected class under Title VII is defined as members of a group that has a common characteristic based on race, color, religion, sex, and national origin, an individual’s status as “minority” is not a statutorily protected class from unlawful employment discrimination.

Given that Executive Order 11246 mirrors the practices of Title VII, agencies may not have a strong legal basis of pursuing an adverse impact cases unless an individual subgroup was identified as adversely affected. An individual subgroup such as African Americans, Hispanics, or Asians must be identified to be adversely affected by a practice at issue. Combining minority groups into an aggregate may have unclear statistical consequences, perhaps inflating disparity or masking disparity against other groups.

Other factors to consider when determining who to include in the adverse impact analysis include: which individuals should be included as the “selected” (numerator) amount and which individuals should be considered as the “pool” (denominator) in the analysis. When determining the “selected” group, or the numerator of the analysis, it is reasonable to include the number of positive employment decisions. This may include selections that are hired from outside of the company as well as those from within the company. In a similar vein, the applicants who are offered a job (including those who declined an offer) should be included as a way of capturing all positive employment decisions.

Furthermore, it is important to consider all of the factors relevant to what is considered an applicant pool, or the denominator of the analysis. Federal contractors should take into account those job seekers who are considered **qualified** for the position that is being applied to in the job posting. Further, hire/reject decisions cannot be made on job seekers who are no longer interested in a position. For example, if job seekers did not show up for an interview, they are

considered as withdrawing themselves from the selection process and it is proper to remove them from the pool of applicants.

Note that the use of appropriate and detailed disposition codes will significantly help the data preparation process, and ensure that the reality of employment decision making is mirrored in adverse impact analyses. As long as the same criteria apply to all applicants, legitimate and non-discriminatory reasons for non-selection can be used to refine the pool of applicants. Further review on this topic will be addressed in detail in the next white paper in this series, *Disposition Codes*, which examines disposition codes and implications of the Internet Applicant Regulation (OFCCP, 2006).

## ***CONCLUSION***

We hope that this primer on adverse impact has been useful. Adverse impact is an important legal, scientific, and social issue, and it is important to understand the history of the concept and operational use in today's EEO environment. This white paper is the first in a series of white papers that address statistical significance and adverse impact. Additional papers will consider (1) disposition codes for impact analyses, (2) statistical significance testing, (3) practical significance measurement, and (4) a review of case law.



## References

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