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Diversity and Big Data

EEOC Training Institute
Technical Assistance Program Seminar
Albuquerque, NM



EEOC
U.S. Equal Employment Opportunity Commission

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DIVERSITY

- **The condition of having or being composed of differing elements or characteristics or variety of elements or characteristics such as types or groups of people.**
- **Including:**

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DIVERSITY


GENDER



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DIVERSITY


RACE/ETHNICITY



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DIVERSITY

AGE



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DIVERSITY


And may affect workforce circumstances such as:

- HIRING
- PROMOTING
- REDUCTIONS IN FORCE

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DIVERSITY

HIRING



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DIVERSITY

PROMOTIONS



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DIVERSITY

REDUCTIONS IN FORCE



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Human Resource Screening

- HR screens on the market that may undermine your efforts to achieve a diverse workforce
 - Conviction Screens
 - Credit Screens
 - People Analytics Screens
- Self assessment is important
 - Uniform guidelines on employee selection procedures
 - https://www.eeoc.gov/policy/docs/factemployment_procedures.html
 - Adverse impact analysis
 - EEO-1 analysis

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Cheaper Information

- Modern technology has increased amount of data about potential and current employees and might appear to offer an opportunity to make more effective and fair employment decisions.
- As we learned years ago, seemingly neutral selection techniques can have an adverse impact on certain types of workers -- Griggs v Duke Power
- As informed consumers, HR staff might want to be wary of three popular types of screens: Convictions, Credit, and People Analytics Screens.

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Employment Screening

- **What is a screening device?**
 - A standardized process by which applicants or employees are examined to determine whether they will move forward in the selection process.
 - Example: Criminal, Credit, People Analytics Screens
- **What is adverse impact?**
 - A substantially different rate of selection in hiring, promotion, or other employment decision process which works to the disadvantage of members of a particular demographic group (i.e. race, sex, ethnic group).


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Adverse Impact

- If the result of the standardized screening practice disproportionately disadvantages members of a particular demographic group, the screening device causes impact.
- According to the Uniform Guidelines for Employee Selection Procedures (UGESP, 1978), if a screen causes impact the employer must demonstrate its validity for job selection (job-relatedness) and consider equally valid alternatives causing less impact.

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Conviction Screens



- For-profit companies (i.e. LexisNexis) offer the service, checking Government-held records
 - Criminal background checks are readily available & relatively inexpensive.
- Nine out of 10 employers run criminal background screens on applicants as part of the hiring process, according to research from the Society for Human Resource Management (SHRM).
 - The number of Americans who have a criminal history on file—about 30 percent, or 92 million people, according to the Bureau of Justice Statistics—has increased exponentially in recent years.

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Conviction Screens: Potential for Adverse Impact

- African Americans are Over-Represented in the Corrections Population
 - Black adults are four times as likely as Whites and nearly 2.5 times as likely as Hispanics to be under correctional control.
 - One in 11 Black adults was under correctional supervision at year end 2007 (9%)
 - Men (all races) are five times more likely than women to be under correctional control.
 - Source: Warren, Jenifer, (2009, Mar. 1), **One in 31 The long Reach Of American Corrections**. Pew Center on the States Retrieved Jun. 24, 2009, from http://www.pewcenteronthestates.org/report_detail.aspx?id=49382
- Criminal Background checks increasing in popularity, overall correctional population increasing, Black men over-represented in the population


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Conviction Screens: Validity

- Two circumstances in which the Commission believes employers will consistently meet the "job related and consistent with business necessity" defense:
 - The employer validates the criminal conduct exclusion for the position in question in light of the Uniform Guidelines on Employee Selection Procedures
 - The employer develops a targeted screen considering at least:
 - the nature of the crime
 - the time elapsed since the offense
 - the nature of the job (the three factors identified by the court in *Green v. Missouri Pacific Railroad*, 549 F.2d 1158 (8th Cir. 1977).
 - The employer's policy then provides an opportunity for an individualized assessment, to determine if the policy as applied is job related and consistent with business necessity. (https://www.eeoc.gov/laws/guidance/arrest_conviction.cfm)

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Credit Screens



- Nearly half of all employers (47%) use credit checks in employee selection (SHRM, 2012)
 - As an initial screen or following a contingent job offer
- One in seven survey respondents with blemished credit reports told that they were passed over for a job because of their credit history (Traub, 2013)

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Credit Screens: Potential for Adverse Impact

- **Research indicates that credit score is correlated with race.**
 - Mean credit scores for African Americans and Hispanics are lower than mean scores for Whites and Asian Americans (for example, see Board of Governors of the Federal Reserve System, 2007)
- **Research further indicates racial differences in specific aspects of credit histories**
 - Late payments, liens and bankruptcies (Freddie Mac, 2000)
 - Student loan defaults (Jackson & Reynolds, 2013)
 - Bankruptcies (Braucher, Cohen & Lawless, 2012; Van Loo, 2009; Warren, 2004)
 - Foreclosures (Kochhar, Gonzalez-Barrera & Dockterman, 2009; Taylor and colleagues, 2010; Warren, 2004)
 - 'Thin-file' or 'no-file' (Turner et. al, 2006)

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Credit Screens: Validity

- **Employers who use credit screens should be thinking about validity evidence for the use of those screens**
- The Uniform Guidelines on Employee Selection Procedures (UGESP, 1978) provides technical guidance for validation studies
- Criterion-related validity assesses the extent to which performance on a selection device (credit screen) predicts some outcome variable of interest (job performance, deviant behavior)
- **Allowed by state law ≠ Valid**
- **Personal belief ≠ Valid**
- Available literature suggests a lack of criterion-related validity evidence for the responsibility and fraud theories
 - Bernerth et al., 2012
 - Bryan & Palmer, 2012
 - Weaver, 2015



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People Analytics Screens

- Utilizing statistical models (which generate scores) to judge job-seekers or incumbents against traits or behaviors exhibited by some group of relevant workers
 - High performers
 - High potentials
 - Employees who exemplify 'the culture'
 - Employees who have quit or retired
 - Employees who have often been absent
- For what purpose?
 - For selection (as an employment screen)
 - Target for opportunities
 - Target for monitoring
 - Set wages

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People Analytics Screens: Potential for Adverse Impact

- **Scores derived from these statistical models are very likely correlated with demographic indicators**
 - May include items such as credit scores that we realize can have an adverse impact.
 - May include items that are not work-related for many employers
 - Flight/attrition risk
 - Fraud risk
- **Consider, for example, utilizing distance from work in a People Analytics model:**
 - Why might employers want to do this?
 - How might this cause adverse impact?
 - Does this variable seem valid for selection (job-related)?

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People Analytics Screens: Validity

- Criterion-related validity assesses the extent to which performance on a selection device (people analytics screen) predicts some outcome variable of interest (job performance, deviant behavior)
- **Jury's out, not much in the way of published research as yet**
- Some things to think about:
 - Correlation versus causation
 - 'Reverse engineering' of validity evidence
 - Are predictions derived from the model of similar predictive value for different demographic groups?
 - Are the variables or decision points in the predictive model related to the job?
 - 'Black-box' machine learning algorithms
 - Job performance operationalized as turnover or absenteeism
 - Individual-level variable versus organization-level variable

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Why Should You Be Concerned?

- Class litigation is costly & time consuming.
- Could damage your reputation
- Could lead to additional complaints & lawsuits
- Settlements can be financially significant
- Distraction from core business concerns

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Be Proactive! Use Self-Assessment Techniques

- Analyze the effect of your employment screens on different groups of workers
- Analyze your own workforce to determine whether it is sufficiently diverse, as compared to similar firms

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Example: Analyze the Effect of your Employment Screens

Results

	FAILED	PASSED	Marginal Row Totals
WHITE	32	48	80
BLACK	28	12	40
Marginal Column Totals	60	60	120 (Grand Total)

The Fisher exact test statistic value is 0.003409. The result is significant at $p < .05$.
<http://www.socscistatistics.com/tests/fisher/Default2.aspx>

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Example: Compare the demographics of your workforce to similar firms

- Perform a comparison of your workforce to competitors in the labor market
- EEOC aggregates data from the EEO-1 reports and makes them available to the public for various purposes
- Including employer self-assessment:
<http://www.eeoc.gov/eeoc/statistics/employment/job-at-eeo1/index.cfm>

Do I have a problem?

I own a small independent grocery store.

Recently one of my customers asked why we did not have any women managers. As a result of that encounter I began to wonder if my workforce is as diverse as it should be.



I don't have a lot of resources, is there anything I can do?

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CO: AB00254
 EQ: AB00254

EQUAL EMPLOYMENT OPPORTUNITY
 2011 EMPLOYER INFORMATION REPORT
 SINGLE ESTABLISHMENT REPORT - TYPE 1

SECTION B - COMPANY IDENTIFICATION
 K MY MACYWAY COMPANY
 123 FIRST PEACH STREET
 ATLANTA, GA 30303

SECTION C - TEST FOR FILING REQUIREMENT
 1-Y 2-Y 3-Y DUNS NO:
 ATLANTA, GA 30303

SECTION E - ESTABLISHMENT INFORMATION
 NAICS: 445110 Supermarkets and Other Grocery (except Convenience) Stores

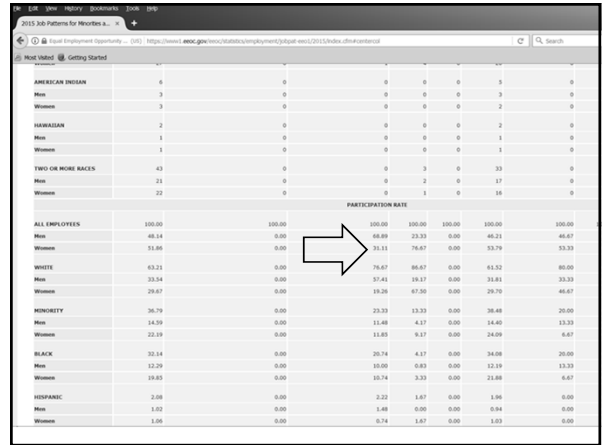
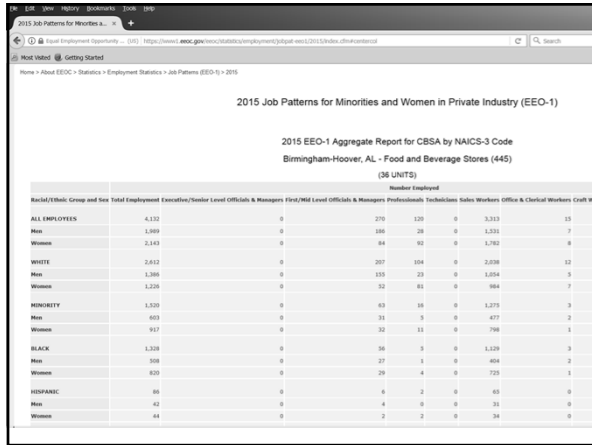
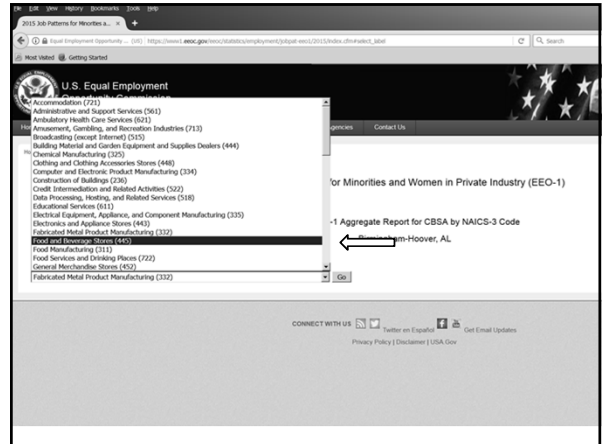
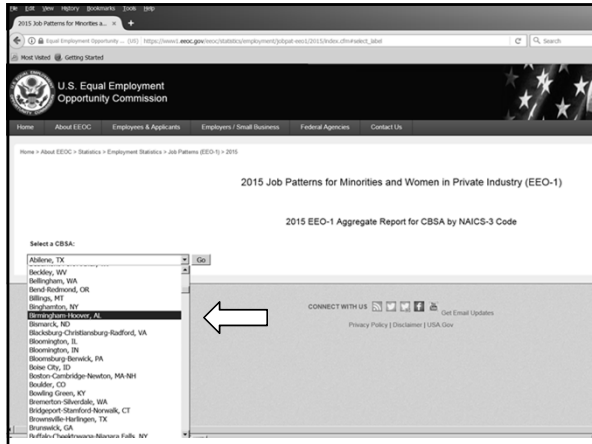
SECTION D - EMPLOYMENT DATA

JOB CATEGOR	NON-HISPANIC OR LATINO														TOTAL				
	WHITE	BLACK OR AFRICAN AMERICAN	HISPANIC/LATINO	ASIAN	AMERICAN INDIAN/ALASKA NATIVE	TWO OR MORE RACES	WHITE	BLACK OR AFRICAN AMERICAN	HISPANIC/LATINO	ASIAN	AMERICAN INDIAN/ALASKA NATIVE	TWO OR MORE RACES	WHITE	BLACK OR AFRICAN AMERICAN		HISPANIC/LATINO	ASIAN	AMERICAN INDIAN/ALASKA NATIVE	TWO OR MORE RACES
EXECUTIVE, OFFICIALS & MANAGERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PROFESSIONALS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TECHNICAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SALES WORKERS	0	0	0	0	0	0	0	0	0	0	0	0	10	0	18	0	0	0	28
ADMINISTRATIVE SUPPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CLERK WORKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPERATIONAL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
LABORERS & HELPERS	5	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
SERVICE WORKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	5	0	22	0	0	0	0	0	0	0	0	0	10	0	18	0	0	0	55
PREVIOUS REPORT TOTAL	111	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	111

SECTION F - REMARKS

DATES OF PAYROLL PERIOD: 07/01/2011 THRU 07/01/2011

SECTION G - CERTIFICATION
 CERTIFYING OFFICIAL: TEST TITLE: TEST
 EEO-1 REPORT CONTACT PERSON: TEST TEST TELEPHONE NO: 3333333333
 CERTIFIED DATE(EET) 08/18/2011 12:03 PM



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Statistical Significance?

- Use an online calculator that computes the *Exact Binomial* to enter:
 - The total number of managers you have (5)
 - The total number of female managers you have (0)
 - The percentage of female managers employed by your competitors (31.1%)
- The aggregate data shows that 34.2 percent of all first/mid level managers are women
 - If *your store* employed women at the same rate as your competitors (31.1 percent) then you would expect to have at least one woman manager (1.61)

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Example Using Vassarstats.net

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Example Using Vassarstats.net

To proceed, enter the values for n, k, and p into the designated cells below, and then click the «Calculate» button. (The value of q will be calculated and entered automatically). The value entered for p can be either a decimal fraction such as .25 or a common fraction such as 1/4. Whenever possible, it is better to enter the common fraction rather than a rounded decimal fraction: 1/2 rather than .5000, 1/6 rather than .1667, and so forth.

n	k	p	q
5	0	0.311	0.68900000

Calculate Reset

Parameters of binomial sampling distribution:

mean = 1.555
variance = 1.0754
standard deviation = 1.0369

binomial p-ratio = (if applicable)

P: exactly k out of n
Method 1, exact binomial calculation: 0.155273059382
Method 2, approximation via normal
Method 3, approximation via Poisson

P: 0 or fewer out of n
Method 1, exact binomial calculation: 0.155273059382
Method 2, approximation via normal
Method 3, approximation via Poisson

P: 0 or more out of n
Method 1, exact binomial calculation: 1.0

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Results: Probabilities of less than 0.05 are considered Significant


	PROBABILITY 0 OR FEWER OUT OF 5	
FOR HYPOTHESIS TESTING	ONE TAILED	TWO-TAILED
Method 1, exact binomial calculation	0.1552	0.3105

<http://vassarstats.net/binomialX.html>

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Interpretation

- Difference between expected and observed disparities would not be considered statistically significant (not less than 0.05)
- Be aware that this type of analysis gives an idea about the **overall representation** of certain protected groups in your workforce
 - **It does not necessarily ensure that all employment practices are free of adverse impact**



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Considerations...

- EEOC does not endorse any particular on-line calculator. Consider:
 - Does it compute an exact binomial test?
 - Does it provide a two-tailed probability test?
- If the table of competitor aggregate data that you need is not on our website EEOC/ORIP will provide a customized table if data is releasable.

For further information contact:

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