Equal Employment Opportunity & the Use of Predictive Analytics Tools

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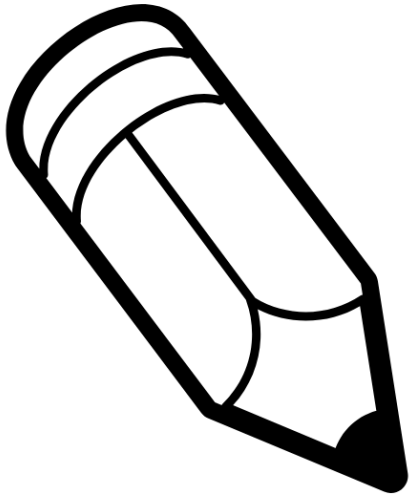
Outline

- Introduction & Overview: Predictive Analytics Tools
  - High Stakes Employment Decisions
- Foundational Laws & Regulations
- Theories of Discrimination
- UGESP
  - Measuring Adverse Impact
  - Measuring Validity



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Quick Intro

Eric M. Dunleavy, Ph.D. is Director of the Personnel Selection and Litigation Support Services division at DCI Consulting Group. He is involved in a wide variety of selection and litigation support services, including as a consulting or testifying expert in Title VII, ADEA, and Executive Order 11246 matters involving various employment outcomes.

Eric received his M.A. (2002) and Ph.D. (2004) in Industrial/Organizational Psychology from the University of Houston. He has published articles in various journals and recently co-edited (with Scott B. Morris) the book "*Adverse Impact Analysis: Understanding Data, Statistics and Risk*" (Taylor & Francis, 2017). He has been adjunct faculty and taught graduate level courses at both George Mason University (GMU) and the University of Maryland at Baltimore Country (UMBC). Dr. Dunleavy received the first *Distinguished Early Career Contributions Award - Practice* award from the Society for Industrial-Organizational Psychology (SIOP) and was also elected as a *SIOP Fellow*. He has testified before the EEOC on matters related to big data in employment.

Kelly Trindel, Ph.D. was Chief Analyst at the United States Equal Employment Opportunity Commission (EEOC) until January 2018. In this role, she led a group of social scientists located in district offices around the country in providing analytic support for systemic investigations and case development. While at EEOC Kelly served as the Commission's expert on 'big data' issues, including changing human resource models and people analytics. She served as the Chair of EEOC's Workgroup on Big Data and as a senior advisor on its Committee of Advisors on Systemic Enforcement. Kelly also co-chaired EEOC's annual academic conference, EEODataNet.

In February 2018 Kelly became Head of I/O Science and Diversity Analytics at pymetrics, a gamified cognitive science startup creating analytics-informed decision-making and performance-enhancement software for the human capital field. pymetrics has been carefully and thoroughly scrutinizing its algorithms for subgroup differences based on protected characteristics since its inception. In this new role, Kelly is responsible for standardization and documentation of a complete end-to-end process for job analysis, predictive validity and adverse impact testing which wraps around pymetrics data-driven strategy for development of its employment selection products.

Why Are We Talking About This Today?

Present Day: employers are using this stuff to make decisions

- Data Science is a big thing
- External vendors and internal people analytics teams should be on your radar

What has changed?

- Data that are available
- What computers can do with those data and at what speed

Movement started in organizational areas outside of HR/talent/legal (e.g., marketing, operations)

- In HR/talent/legal now

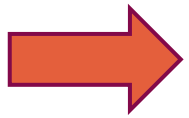
The EEO world is often temporally years behind changes in Organizational Practice

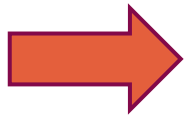
Predictive Analytics in Employment

- AKA Workforce Analytics, Talent Analytics, People Analytics, HR Analytics…
- The application of diverse data sources and data science techniques to employment decisions
  - Employment Selection
    - e.g. Sourcing, Hiring, Promotion, Discharge
  - Pay
  - Succession Planning
  - Workplace Design
- Data can be passively compiled or collected directly

Changes

- Resume Review
- Personality Assessment
- IQ Test
- Test of Job Knowledge
- Work Sample
- References Request
- Criminal Background Check
- Credit Check





- Passive Data Collection
- Facial Expression/Tone of Voice/Pattern of Speech Analysis
- Network and Communication Pattern analysis
- Assessment Gamification
- 'Match-making' approach to job search
- Profiling Top Performers to Attract and Select High Potential Candidates
- Models that Learn/Change over Time

Traditional Job analysis + Validity

Cross Validation during Model Build

The Promise?

- Efficiency
  - Automated & scalable
  - Predict rather than describe
  - Improve the candidate & employee experience
- Effectiveness
  - Demonstrate ROI
- Job Relatedness
  - Criterion validity is built into the process (cross validation)
- Fairness
  - Minimize the likelihood of intentional discrimination
  - Remove bias while retaining signal
  - Automate Adverse Impact Analysis
  - Automate the search for less discriminatory alternatives

The Danger?

- Job Relatedness
  - Not all criterion studies are created equal
  - Construct and Content-oriented validity strategies may not be feasible
  - Traditional job analysis often missing/may not be feasible
- "Fairness"
  - Algorithms replicate previous decisions
  - If training data is homogeneous, algorithm results may perpetuate that homogeneity in race, gender, age, etc. unless extra precautions are taken
- Data scientists tend not to be trained in issues of "fairness" or job-relatedness
  - Employment decisions are much more high-stakes and better- regulated than decisions made in other parts of the business
  - Optimizing on **accuracy** and not **fairness**.
  - **Predictive** versus **explanatory** analytics
  - A note on data science as a field

Foundational Laws and Regulations Enforced by EEOC

- Title VII of the Civil Rights Act – protections on the basis of race, sex, religion & national origin.
  - Uniform Guidelines on Employee Selection Procedures (UGESP, 1978)
  - EO 11246 imposes non-discrimination and affirmative action requirements for Federal contractors
- Title I of the Americans with Disabilities Act - makes it illegal to discriminate against a person with a disability
- Age Discrimination in Employment Act - protects people who are age 40 or older from discrimination because of age.
- Genetic Information Non-Discrimination Act – protections for genetic information.
  - Including information about family members, as well as information about any disease, disorder or condition of an individual's family members (family medical history).

Theories of Discrimination

- Employment tests and screens can be very effective, but their use must be lawful
  - Disparate Treatment: Cannot be used to *intentionally* screen out people of a certain race, sex, national origin, religion, disability, or age (40 or older).
  - Disparate Impact: **Even if the discrimination is not intentional**, these measures cannot screen on protected characteristics *unless the Employer can properly justify their use*
- Landmark Supreme Court Case: Griggs v. Duke Power (1971)

UGESP

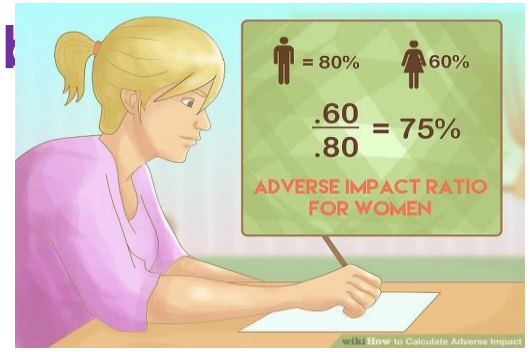
- The Uniform Guidelines (EEOC et al., 1978)
  - If there is statistical evidence of adverse (disparate) impact the employer must be able to demonstrate:
    - The job-relatedness or business necessity of the procedure
      - Validity as a form of job-relatedness
    - Attempts to identify equally-valid alternative selection devices with less impact
  - Quick note: adverse impact can be measured in different ways

U.S. Equal Employment Opportunity Commission, U.S. Civil Service Commission, U.S. Department of Labor & U.S. Department of Justice. (1978). Uniform Guidelines on Employee Selection Procedures. Federal Register, 43, 38295-38309

Measuring Adverse Impact

§ 1607.4 (D) *Adverse impact and the 'four-fifths rule.' 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 . . ..

- **Smaller differences in selection rate may nevertheless constitute adverse impact, where they are significant in b statistical ($p < .05$) and practical terms or where a user's actions have discouraged applicants**
- The state of the EEO practice (for better or worse): Significance Tests are most commonly used



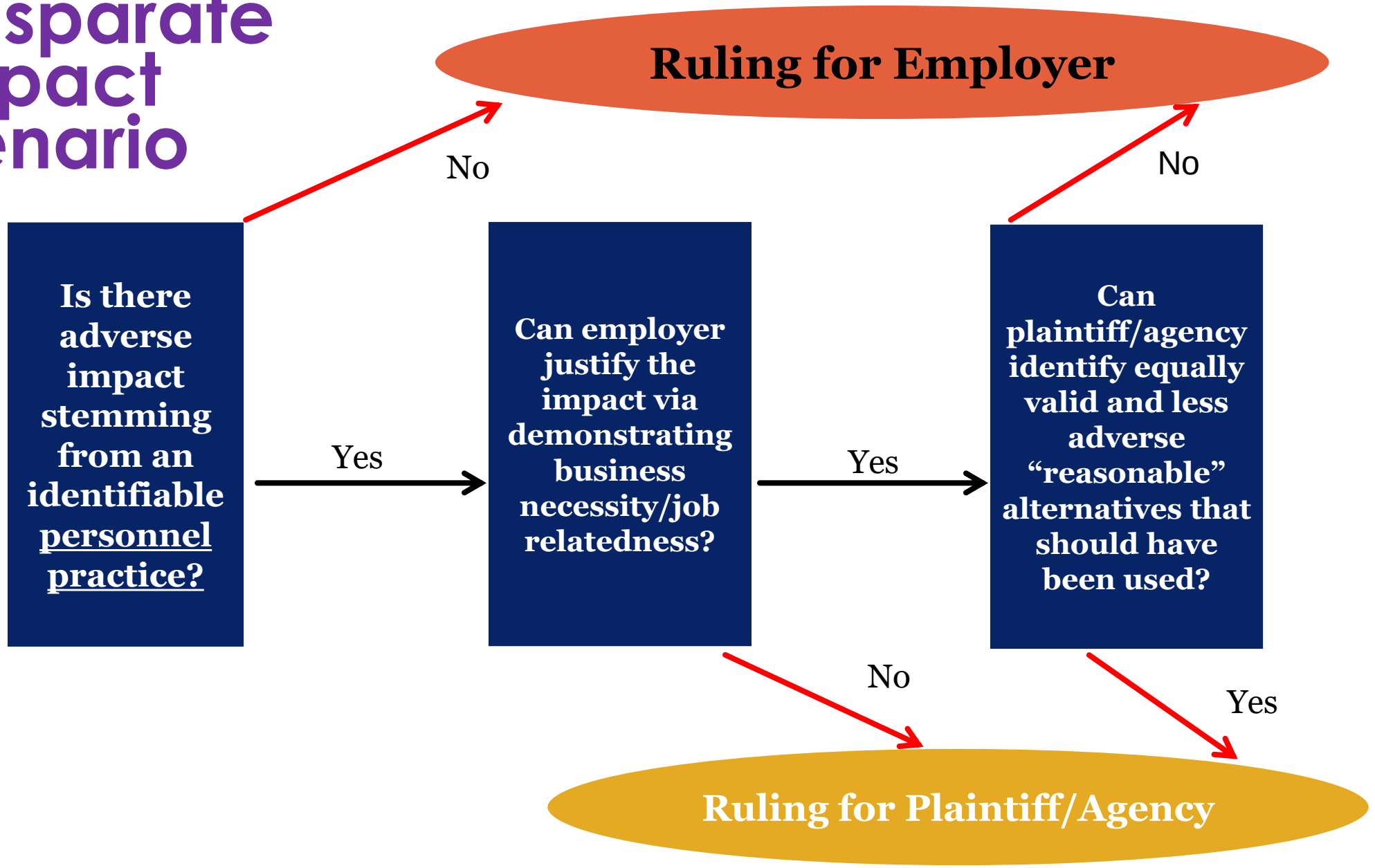
Measuring Validity (per UGESP)

- **Criterion-Related Validity** - The extent to which test scores are systematically related to a relevant criterion
  - Concurrent Criterion-related validity typically built into model build
  - Criterion usually defined as some measure of job performance or other important outcome
  - Criteria themselves may be biased (e.g. absenteeism)
- **Content Validity** - The extent to which the items on a test are representative of the construct the test measures
  - In employment, the construct the test measures is the ability to do the job
  - Requires a qualitative/quantitative study of the job itself, identification of its essential functions, KSAs
- **Construct Validity** - Involves accumulating evidence that a test is based on sound psychological theory
  - Convergent & divergent evidence that the construct is what you think it is
  - UGESP does NOT do a great job of defining this concept

§ Sec. 1607.15 Documentation of Impact and Validity Evidence

- **Users** [with more than 100 employees] **of selection procedures . . should maintain and have available for each job, records or other information showing whether the total selection process for that job has an adverse impact . .. Adverse impact determinations should be made at least annually for each such group which constitutes at least 2 percent of the labor force**…
- Where a total selection process for a job has an adverse impact, the user should maintain and have available records or other information showing *which* components have an adverse impact.
- Where there is evidence of adverse impact, the employer should have evidence of:
  - Validity of the selection device
  - Attempts to reduce AI
- **Again……talk to your attorney on this issue**

The Disparate Impact Scenario



A Framework for Evaluation

See DCI handout

Content and Scoring

- What is being measured?
- What exactly is the algorithm doing?
- Is the algorithm predicting an appropriate outcome?

EEO Thoughts

- Have you/vendor looked at adverse impact?
- Does the algorithm take into account race/sex?

Documentation

- Is there a technical manual available?
- Has a validation study been conducted?

Summary

- Potential benefits and drawbacks of predictive analytics for employment selection
- Foundational laws to protect people from unfair decisions based on protected characteristics
- UGESP is a set of guidelines for using employment selection tools without violating Title VII of the Civil Right Act
  - It establishes the concept of disparate (adverse) impact, which **need not be intentional**
  - Gives a general outline: When adverse impact exists, must demonstrate job-relatedness and consider alternatives
  - UGESP is now 40 years old. It was not written with data science or predictive analytics approaches in mind
    - Some say it's not equipped to handle more contemporary techniques
    - Its likely that, at some point, regulatory agencies will pass guidance to address this
    - Is likely that accumulating case law will address this

Questions :: Comments :: Ideas

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