People Analytics & Employment Selection: Opportunities & Concerns

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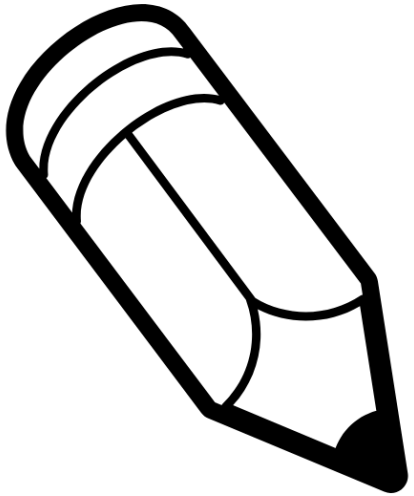
Outline

- Introduction & Overview: People Analytics
  - Promise & Danger
- Foundational Laws & Regulations
  - UGESP
    - Measuring Adverse Impact
    - Measuring Validity
- Brainstorming research interests/ideas



People Analytics

- AKA Workforce Analytics, Talent Analytics, HR Analytics…
- The application of diverse data sources and machine learning 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

What do People Analytics tools look like?

Passive Recruiting tools and screens of passive candidates

Facial expression/tone of voice/language pattern analysis from recorded interviews

Profiling tools that allow employers to select candidates who are similar to a particular profile

Simple or complex 'games' that collect job fitness measurements

Tools designed to track employee movement and communication patterns

????? There seems to be a new tool on the market every week

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
  - Construct and Content validity evidence often missing
  - Traditional job analysis often missing
- Fairness
  - Algorithms replicate previous decisions
  - If training data is homogeneous, algorithm results will tend to perpetuate that homogeneity in race, gender, age, etc.
- Data and computer scientists tend not to be trained in issues of fairness or job-relatedness
  - Employment decisions are much more high-stakes and better- regulated than marketing decisions
  - Optimizing on **accuracy** and not **fairness**.
  - **Predictive** versus **explanatory** analytics

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)
- 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

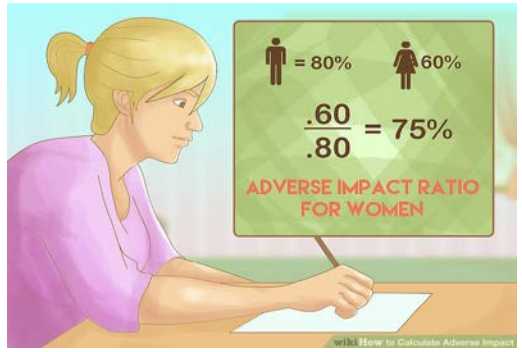
- The Uniform Guidelines (EEOC et al., 1978)
  - If there is statistical evidence of adverse (disparate) impact the employer must be able to demonstrate:
    - The validity of the procedure
      - Job-relatedness
    - (Test prep) Fairness
      - Applicants/employees had equal access to any available preparation materials
    - Attempts to identify equally-valid alternative selection devices with less impact
    - Additional attempts to reduce adverse impact

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 both statistical (p < .05) and practical terms or where a user's actions have discouraged applicants**



Measuring Validity

- **Criterion-Related Validity** - The extent to which test scores are systematically related to a relevant criterion
  - Criterion usually defined as some measure of job performance
  - Measures of job performance themselves may be biased (e.g. absenteeism)
  - Reverse-engineering to demonstrate criterion-related validity, providing built-in defense
- **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

§ 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

Summary

- People Analytics has to do with the application of diverse data sources and machine learning techniques to employment decisions
- 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: Device should be fair, and job-related. Should optimize on fairness
  - UGESP is now 40 years old. It was not written with machine learning or people 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
    - Is likely that accumulating case law will address

Brainstorming Research Interests

- **Fairness**
  - Investigating relationships between passive data and protected characteristics
    - Or intermediary variables related to both?
    - Including age, genetic information, disabilities
- **Validity**
  - Investigating *reliability* of passively-collected data
    - Can it lead to false assumptions about people?
  - Construct: Is personal history really related to career, work, job performance?
    - Biodata in I/O psychology
    - Example: credit history and job performance…?
- **Explanatory** versus **predictive** analytics; non-biased comparisons
  - **Help regulators understand this**
  - What's the model for properly **combining** the two?

Questions :: Comments :: Ideas

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