

## Compensation Adverse Impact Analyses – Key Concepts and Approaches

Paul F. White, Ph.D.  
Fredrick Holt, Ph.D.

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# *Outline*

- Motivation
- Key Statistical Concepts
- Features of Compensation Analysis
- Regulator Approaches
- Employer Approaches
- Review Checklist





# *Motivation*





# *Regulatory Oversight*

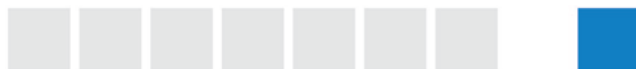
- EEOC v Bloomberg - pattern and practice claim of discrimination against women in promotion, pay, and terms of employment
- EEOC v Walgreen Co – pattern and practice lawsuit alleging discrimination against African Americans in pay and promotion - \$24.4 million settlement
- EEOC v Wal-Mart – alleged gender discrimination at Kentucky logistical center – \$11.7 million settlement
- EEOC v Amtrak – allege gender discrimination in pay and work assignments
- EEOC v Kelley Drye – allegation of age discrimination in compensation system
- Secretary Solis has stated that compensation audits are a priority for the OFCCP – but it is still the case that the vast majority of OFCCP settlements are hiring related





# *Class Action Litigation*

- Dukes v. Wal-Mart, 2003-2011, Nationwide class-action alleging gender discrimination in promotions and compensation. Multi-billion dollar potential liability.
- Velez v Novartis – Female sales reps allege discrimination in pay and promotion – \$175 million settlement
- Davis v Eastman Kodak – African –American allege discrimination in pay and promotion – \$21.4 million settlement
- Bellifemine v Sanofi-Aventis – Female sales reps allege gender discrimination in pay and promotions - \$15.36 million settlement
- Amochaev v Citigroup – Female managers allege discrimination in pay, promotions, and terms of employment - \$33 million settlement





# *Focus on Compensation*

- Sophisticated class action plaintiff attorneys see statistical analysis as critical to demonstrating adverse impact

*“We get the data, analyze it with a labor economist and make a judgment as to whether women are paid less than similarly situated men and promoted less than similarly situated men,“*

David Sanford of Sanford Wittels

- Regulators are under substantial pressure to address perceived persistent disparities in pay by race and gender

*“This Equal Pay Day, I want to recognize that, although progress is being made, equal pay is still far from a reality for millions of working women and their families. We must continue to pursue pay equity with passion and determination.”*

Secretary of Labor Hilda L. Solis





# *Key Statistical Concepts*





# *Economics and Statistics in Employment Law:*

- Circumstances calling for statistical analysis
  - Class Action Cases
  - Single-Plaintiff Cases
  - OFCCP Audits
  - EEOC Investigations
  - Proactive Monitoring





# *Economics and Statistics in Employment Law:*

- General tasks involved in a statistical analysis
  - Analyze statistical patterns in the employer's workforce and determine whether there is any evidence that protected employees are disadvantaged
  - Calculation of damages / economic loss
  - Review quality/integrity of the relevant employment data
  - Write reports and present findings to executives, regulating agency, judge, or jury





# *Central Features of Analyses*

- Levels of compensation for the protected employees is somewhat close to levels for the non-protected employees
- Comparisons limited to similarly situated employees
- Statistical significance is a metric used to evaluate how close is close enough
- Statistical model should reflect the actual decision-making process as closely as possible given available data:
  - Factors considered in process
  - Similarly-situated employees
  - At what level were decisions made?





# *Similarly Situated*

- Similarly situated individuals
  - Share common set of features that are key in the decision making process
  - Were compared against each other in the decision making process
- When dissimilar groups are combined, an adverse impact analysis may:
  - Inappropriately find a statistically significant difference when one did not occur, or
  - Mask statistically significant differences within sub-groups.





# *Similarly Situated*

- Similarly Situated Employee Groups as defined by the OFCCP's Federal Contract Compliance Manual
  - Similarity of the work they perform (using job analysis data and/or interviews with job experts),
  - Levels of responsibility required in their position(s),
  - Skills needed to perform their jobs, and
  - Qualifications needed to perform their jobs.



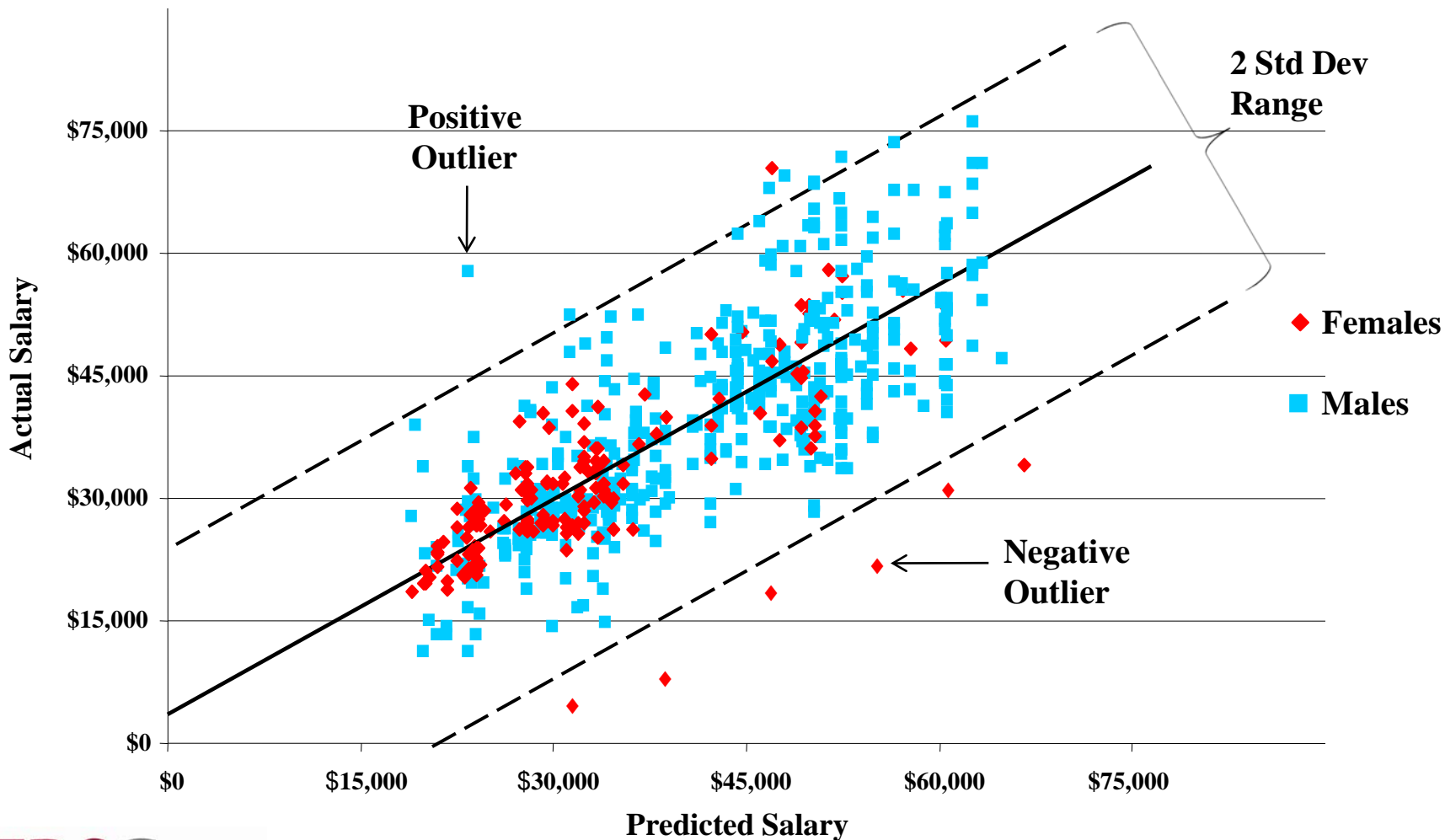


## *Objective of Analysis*

- Determine what is expected to happen in a non-discriminatory decision making process
- Compare what is expected to happen to what actually happened, and
- Determine if the difference between what is expected to happen and what actually happened is consistent with a decision making process that is random with respect to protected group status (i.e. statistically significant).



# Actual v. Predicted Salary





# *Statistical Significance*

- A comparison between what we observe and what we would expect to observe in a neutral setting
- “Small” differences between actual and expected are common and can be attributed to random chance
  - Average female salary - \$55,025
  - Average (similarly situated) male salary - \$55,000
  - Difference likely not statistically significant
- “Large” differences between actual and expected makes one question whether the process is fair
  - Average female salary - \$40,000
  - Potentially statistically significant



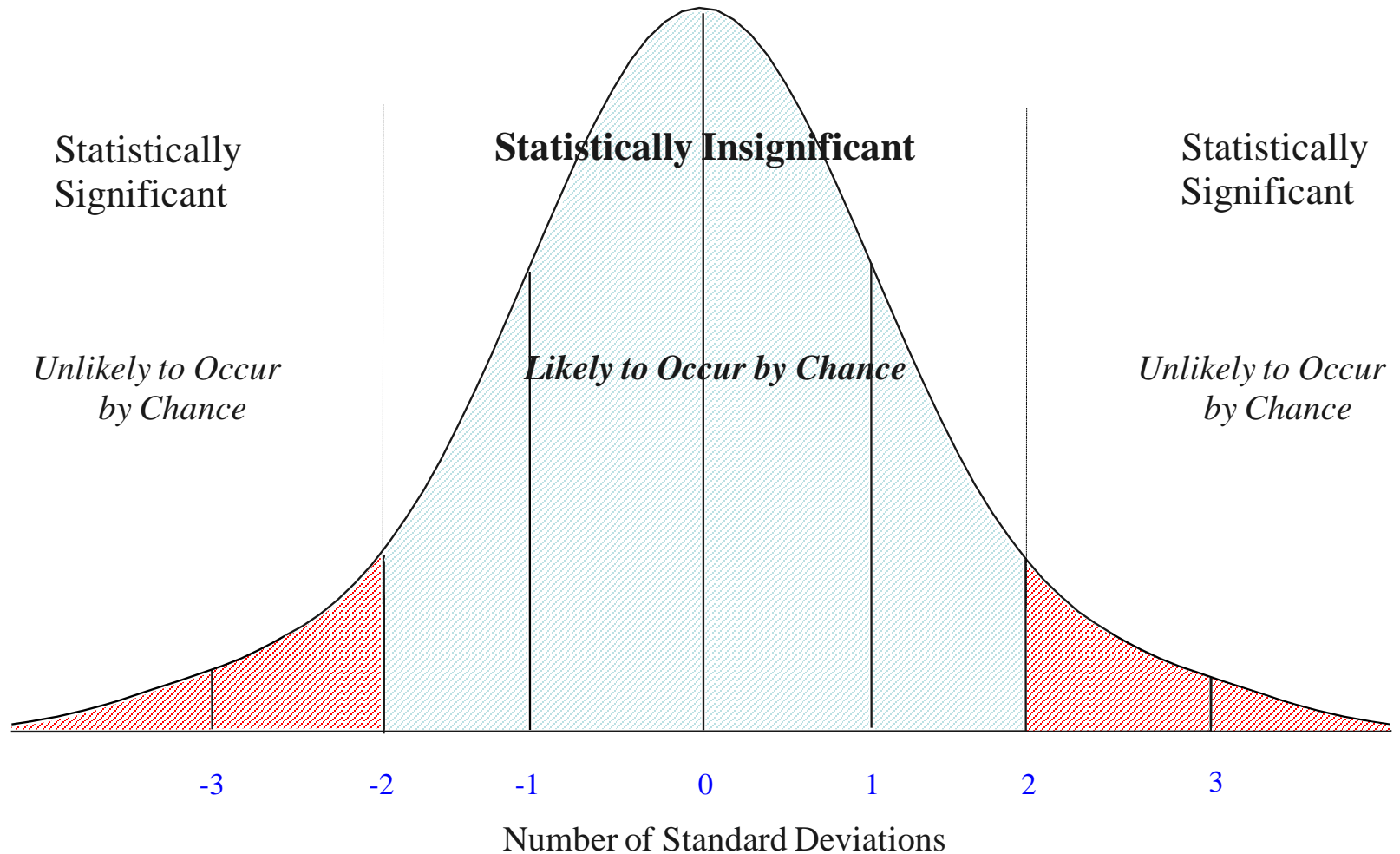


# *Statistical Significance*

- Number of Standard Deviations (statistical measurement of difference between actual and expected)
  - Greater than “two or three” is statistically significant
- Probability of occurring by chance:
  - Less than 5% is statistically significant
- In Practice:
  - Greater than 2 standard deviations or less than 5% probability level



# *Standard Normal Distribution*





# *Features of Compensation Analyses*





# *Compensation in Many Forms*

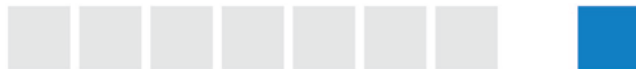
- Pay Increase
  - Merit Increases
  - Promotion Increases
- Bonus
  - Cash
  - Stock
- Starting Pay
- Annual Base Pay





# *Potential Areas of Adverse Impact*

- Gender
- Race/Ethnicity
  - White/Non-White
  - Individual race categories
  - Race/Gender interactions
- Age
  - Forty threshold
  - Other thresholds
- National Origin





# *Varied Levels of Analysis*

- What level of analysis is appropriate for the analysis of pay differences
  - Company wide
  - By facility
  - By pay grade
  - By department
  - By job
  - By Similarly Situated Employee Group (defined by a combination of factors)





# *Range of Analysis Tools*

- Graphical/Tabular Presentations
- Non-Statistical (rule of thumb) Methodologies
  - 80% Rule
  - OFCCP 3 Trigger Test
  - Cohort Studies
- Comparison of Averages (t-tests)
- Multiple Regression (Ordinary Least Squares)
- Non-Parametric Tests
  - Wilcoxon Signed Rank Test



# *Range of Analysis Tools*

- What guides the selection of the approach?
  - Nature of the complaint
  - Data availability
  - Sample size
  - Characteristics of decision making process
  - Legal considerations
  - Experience/Skills of analyst/expert





## *Case Study – XYZ Corp*

- XYZ Corp is an OFCCP regulated federal government contractor
- XYZ Corp just got a letter indicating it has been selected for a Compliance Review
- Compliance Review letter includes an ‘Item 11’ request for

*“annualized compensation data by either salary range, rate, grade, or level showing total number of employees by race and gender and total compensation by race and gender”*





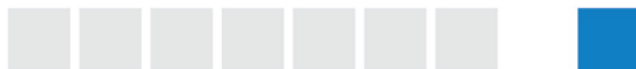
# *Regulator Approaches*





# *Overview*

- Data constraints initially limit the regulator to non-statistical analysis tools.
  - Bar charts
  - 3 Trigger Method
  - Glass Ceiling Analysis
- Access to additional data allows for statistical tests.
  - t-tests
  - Multiple Regression
- Regulator compensation analyses often suffer from a number of deficiencies



# Case Study – XYZ Corp

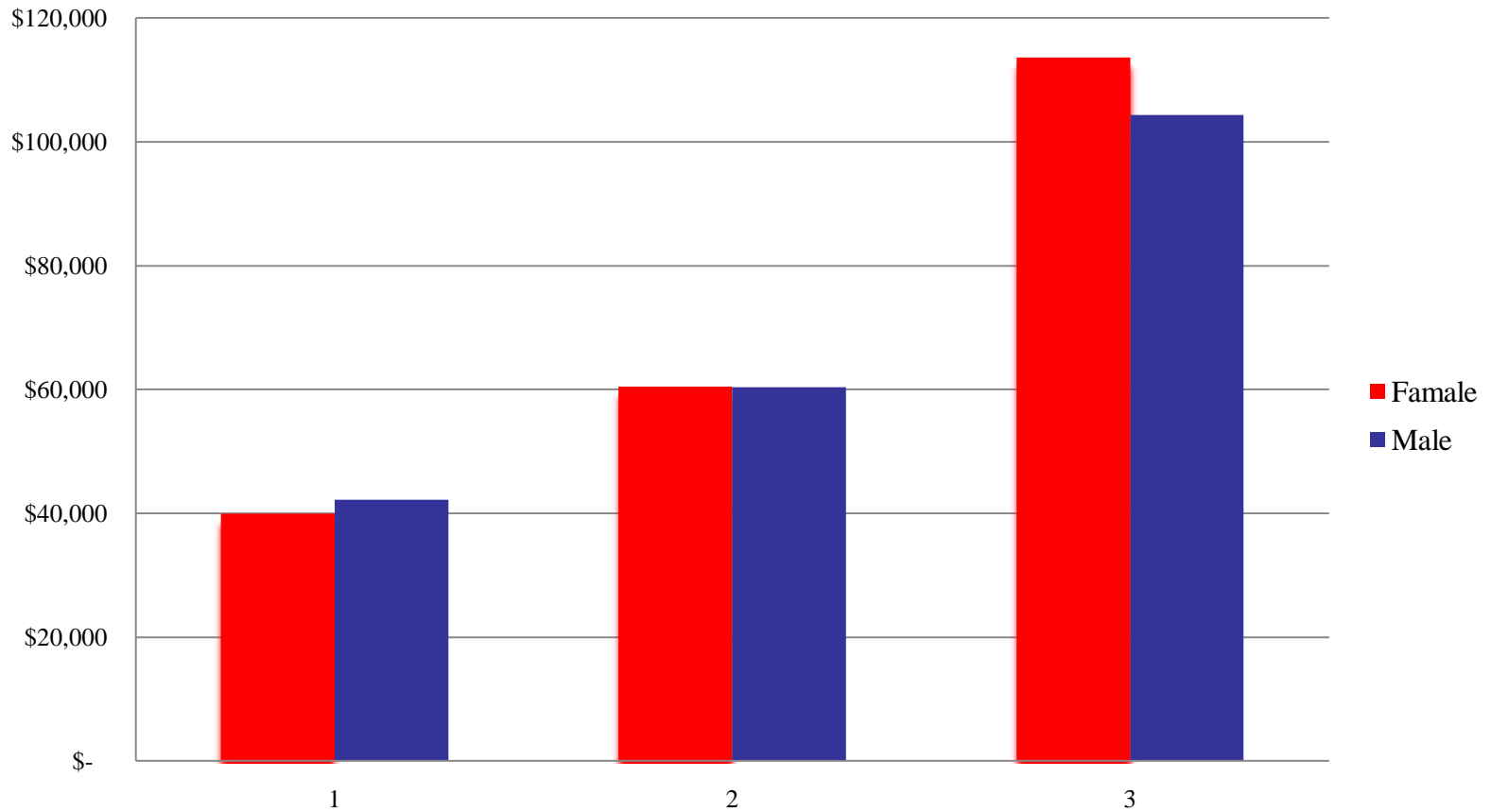
- Simple table based on Item 11 data
- Observed differences
  - Males paid more in Salary Grade 1
  - Females paid more in Salary Grade 3
- Can not determine
  - What other factors may be driving difference
  - Are the differences small enough to have simply occurred by chance

Salary Grade	Counts		Average Salary	
	Female	Male	Female	Male
1	24	28	\$ 39,966	\$ 42,161
2	10	30	\$ 60,435	\$ 60,396
3	5	7	\$ 113,583	\$ 104,299



# Case Study – XYZ Corp

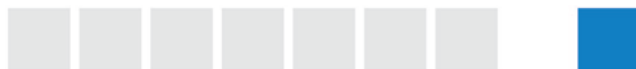
## Average Annual Salary by Pay Grade





# *OFCCP 3-Trigger Method*

- Non-statistical ‘rule of thumb’ method
- Relies on limited tabular data provided in response to Compliance Review letter Item 11
- Benefits to reviewing approach
  - Straight-forward to compute
  - Has been used as a screening tool to identify contractors requiring additional compensation review
- Limits to the usefulness of this approach
  - OFCCP has been inconsistent in the details of the methodology
  - Unclear whether or not OFCCP still uses this methodology





# *OFCCP 3-Trigger Method*

- Compare average compensation of protected and non-protected employees by employee group
  - Identify “affected” protected emps
  - Identify “affected” non-protected emps
  - Group “affected” if the average pay is more than 2% less than the other group
- Ask two questions
  - Are more than 30% of protected emps affected?
  - Are the number of protected emps affected 3 times higher than the number of non-protected emps?
- If the answer to both questions is yes – the OFCCP may request individual employee data

# Case Study – XYZ Corp

- OFCCP 3 Trigger calculation - Gender

Salary Grade	Counts		Average Salary		Difference	Affected	
	Female	Male	Female	Male		Female	Male
1	24	28	\$ 39,966	\$ 42,161	-5.2%	24	
2	10	30	\$ 60,435	\$ 60,396	0.1%		
3	5	7	\$ 113,583	\$ 104,299	8.9%		7

- More than 30% of Females Affected – Yes
- Affected Females more than 3 times Affected Males – Yes
- Not a statistical finding





# Case Study – XYZ Corp

- OFCCP has completed its desk audit
  - *“The results of our analysis indicate unexplained differences in average compensation that require further investigation of your company’s practices”*
- OFCCP requests additional data
  - Empid
  - Job title
  - Job Group
  - Dept
  - Gender
  - Race
  - Date of hire
  - Date of last grade change
  - Annual base salary
  - Part time indicator
  - Work shift
  - FLSA status
  - Grade level
  - Location



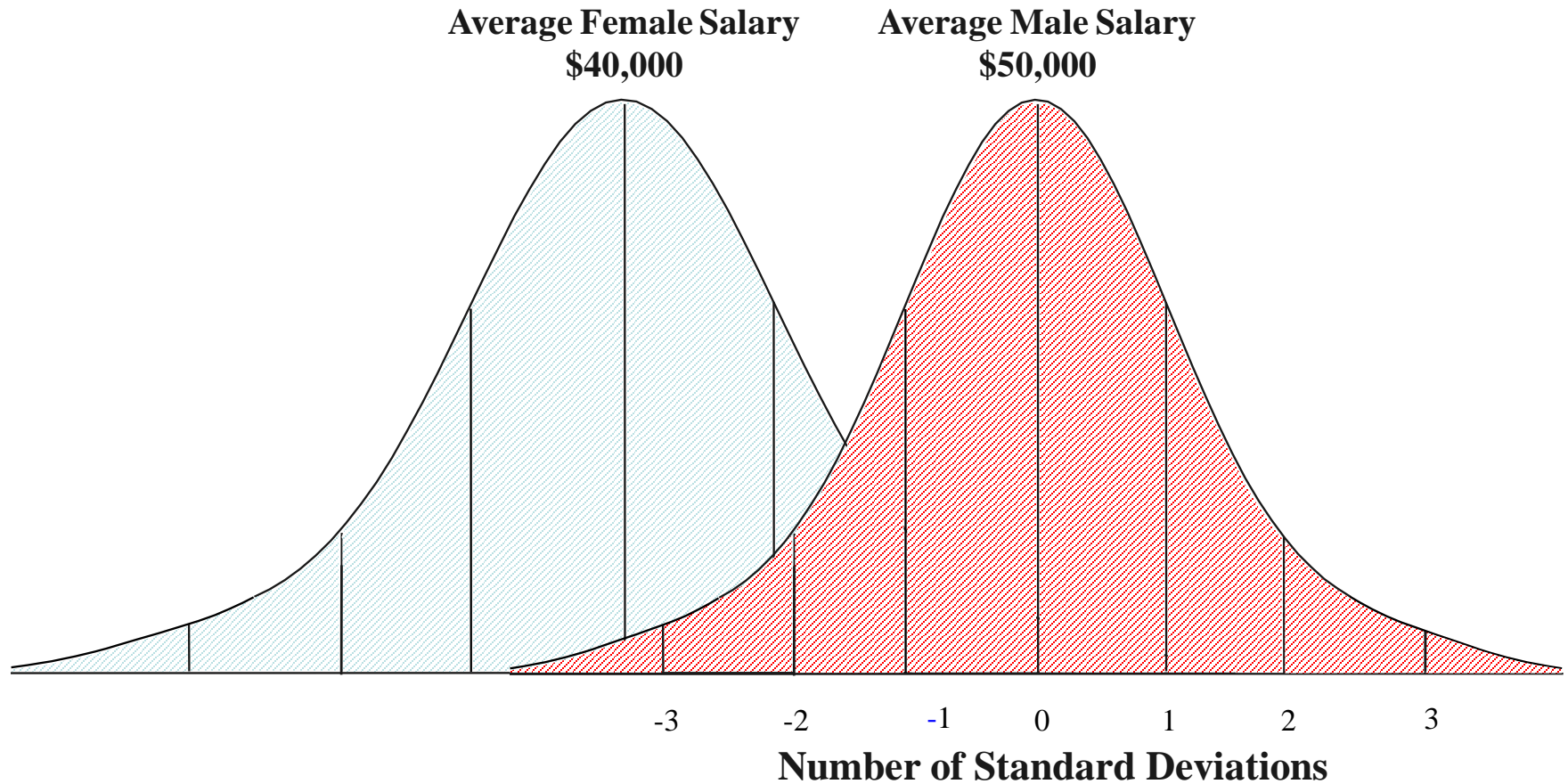


# *t-Tests*

- t-Test is a standard statistical procedure used to evaluate whether or not the difference in two averages is statistically significant
- Advantages –
  - Straight-forward to compute
  - Can be computed at various levels of aggregation (e.g. by pay grade)
- Disadvantages –
  - Can not simultaneously control for multiple factors
  - Results can be unstable for small sample sizes



# *Statistically Significant Difference in Average Salaries*





## *t-Tests*

- What does a statistically significant result mean
  - A statistically significant difference indicates that the observed difference is not likely to have occurred by chance in a neutral salary-setting process.
- What is the implication of this
  - Gender is a factor that influences pay;  
and/or
  - The difference is attributable to group differences in factors that influence salaries that happen to be related to gender, and for which the analysis has not accounted.



# Case Study – XYZ Corp

- Test for statistically significant differences in average Salary by Salary Grade

Salary Grade	Counts		Average Salary		Difference	t-stat
	Female	Male	Female	Male		
1	24	28	\$ 39,966	\$ 42,161	\$ (2,196)	-2.82
2	10	30	\$ 60,435	\$ 60,396	\$ 39	0.05
3	5	7	\$ 113,583	\$ 104,299	\$ 9,284	4.11

- Difference in SG 1 is statistically significant in favor of men
- Difference in SG 3 is statistically significant in favor of women – but small sample suggests result may not be reliable





# *Multiple Regression*

- Statistical method used to measure the relationship between variables.
  - Are they positively or negatively related?
  - How strongly are they related?
  - Are they significantly related?
  - Note of Caution: Measures correlation, not causation
- Regression analysis estimates a trend line that best fits the data to measure the relationship between...
  - Compensation
  - Factors that affect compensation
- Regression measures the marginal impact of each factor





# *Multiple Regression*

- Key inputs
  - Compensation measure – e.g. annual pay
  - Set of relevant business related factors consistent with employers compensation policies and practices
  - Protected group indicator– e.g. gender
- Key output
  - Estimates coefficient (or weight) on the protected group control.
  - An estimate that is negative and statistically significant is consistent with adverse impact





# *Multiple Regression*

- Advantages
  - Can generate an overall result
  - Can simultaneously control for several factors
  - Generates rich output – allowing for varied compensation diagnostic exercises
- Disadvantages
  - Demanding (very) of data
  - Complicated to correctly implement
  - Complicated to interpret





# *Case Study – XYZ Corp*

- OFCCP applies regression to a contractors compensation data
- Model is estimated by salary grade with the following controls
  - Job Group
  - Dept
  - Gender
  - Tenure with company
  - Tenure in grade
  - Part time indicator
  - Work shift
  - FLSA status
- OFFCP approach is handicapped by
  - Limited access to and understanding of data
  - Limited understanding of decision making process



# Case Study – XYZ Corp

- Key regression output – the coefficient on gender

Salary Grade	Counts		Female	t-stat	R-squared
	Female	Male	Coefficient		
1	24	28	\$ (1,751)	-2.05	55%
2	10	30	\$ 4	0.05	50%
3	5	7	\$ 4,002	NA	NA

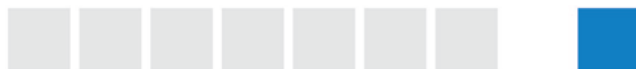
- Difference in SG 1 is still statistically significant in favor of men – although results improved relative to t-test
- Statistical inference in SG 3 not possible due to small sample size





# *Regulator Approaches*

- OFCCP compensation analyses often suffer from a number of deficiencies
  - Do not accurately reflect the decision making unit (SSEG) in model design
  - Do not include critical factors in model design
  - Do not adequately explore anomalies and outliers in data
- A contractor can take steps to address these issues with the goal of bringing the Compliance review to a successful conclusion





# *Employer Approaches*





# *Overview*

- The contractor can develop several processes that will facilitate response to an OFCCP Compliance Review
  - Documented and consistently administered compensation policies
  - Improved HRIS systems
  - Coordinated response team
  - Proactive and privileged self-monitoring
  - Proactive and privileged compensation adjustments





# *Compensation Policies*

- It will be difficult to develop a reliable statistical model of a compensation process if that process is either
  - Poorly documented
  - Inconsistently applied
  - Overly subjective
- Positive features of a compensation policy include
  - Sensibly defined pay grades
  - Well documented performance process
  - Well defined jobs and departments
  - Consistent rules for pay changes associated with promotion, demotion, merit award, etc.
- History can be important



# *HRIS Systems*

- Compensation analyses are only as good as the data that goes into them
- Maintaining good data on current pay, race, gender, and age is (obviously) critical
- Almost as critical is access to complete and accurate job history data
  - Issues with legacy systems
- Access to electronic application data is often quite powerful (e.g. education and pay at prior job)
- Knowing the weakness of your own data is critical





# *Response Team*

- Responding to an OFCCP audit requires a well coordinated team
  - Human Resources
  - Legal
    - In-House
    - Outside
  - Senior Management
  - IT (including outside data vendor)
  - Statistician





# *Self-Monitoring*

- Periodic self-monitoring can put a contractor in position to defuse OFCCP compensation concerns
- Self-monitoring process should include the following features
  - Privileged and confidential – involve counsel
  - Qualified statistical analyst
  - Account for decision making process
  - Fully utilize available data
  - Review model fit, diagnostics, and sensitivity
  - Localize source of any measured disparity
  - Review for any potential ‘tainted’ variables





# *Case Study – XYZ Corp*

- Contractor generated model differs from OFCCP approach in several ways.
  - Defines SSEG with respect to job groupings and department groupings – not pay grade – consistent with pay setting process
  - Includes legacy company control
  - Incorporates refined tenure measures
  - Incorporates training/certificate/education data
  - Incorporates performance data
  - Corrects problem with part time indicator
- All of these enhancements/corrections can have a substantial impact on the analysis



# Case Study – XYZ Corp

- Contractor compensation model shows no adverse impact

SSEG	Counts		Female	t-stat	R-squared
	Female	Male	Coefficient		
A	17	14	\$ (891)	-1.11	77%
B	7	25	\$ (21)	-0.22	66%
C	10	22	\$ 3	0.04	71%
D	5	4	\$ 3,002	NA	NA

- Contractor may consider using self-monitoring to assist or guide OFCCP Compliance Review
  - Provide additional data
  - Provide additional guidance on compensation process (e.g. SSEGs)





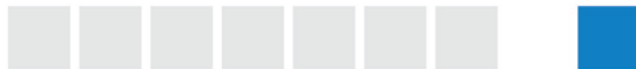
# *Compensation Adjustments*

- Self-monitoring may uncover localized race/age/gender differences in pay that are not explained by legitimate business factors
- If this occurs – the contracts should consider making pay adjustments
- Features of a sensible adjustment process include
  - Privileged and confidential
  - Sound adjustment process consistent with business goals
  - Dedicated budget
  - Senior management and line management buy-in
  - Implementation plan that minimizes profile/disruption





# *Response Checklist*





# *Best Practices*

- How should a contractor react when confronted with an unfavorable OFCCP compensation analysis
  - Consult with team
  - Review data employed
  - Review model specification
  - Review model output





# *Consult with Response Team*

- Alert internal compliance team and ensure active communication
  - In-House Counsel
  - Human Resources
  - Compliance
  - Information Technology
- Explore need for outside assistance
  - Outside counsel
  - Statistical expert
  - Outside data vendor





# *Review the Data Employed*

- The regulator does not know your data as well as you do
  - Are they using the correct set of employees (specific date and location)?
  - Have they interpreted the data fields correctly?
  - Have they identified and resolved data anomalies?
  - Have they correctly accounted for missing data?
- Employers increased reliance on 3<sup>rd</sup> party data vendors can be a challenge
  - Employer may not be aware of all the subtleties of their own data
  - Employer may not be able to readily generate data extracts
- Data analyst that is part of the HR/Compliance department can be a strong positive



# *Review Model Specification*

- Similarly Situated Employee Groups in model specification
  - Accurately defines SSEGs?
  - Separate models for each SSEG?
- Pay setting process in model specification
  - Starting pay
  - Merit increases (Performance)
  - Promotion increases (Demotion decreases)
  - Location premiums
  - Shift premiums
  - Job premiums
  - Temporal premiums
  - etc





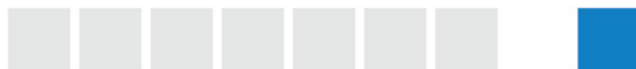
# *Review the Model Output*

- Possible red flags to look out for in regulator analyses
  - Regressions with small number of observations
  - Regressions with poor fit (R-squared or F-test)
  - Regressions with nonsensical parameter estimates
- Contrasting actual pay vs. predicted pay
  - Helps identify outliers/anomalous data
  - Helps identify factors missing from the model
- Replicate the regulators results
  - Uncovers data processing errors
  - Allows for clean sensitivity tests





# *Questions or Comments?*





# *ERS Group Presenters*

## **Paul White, Ph.D.**

Dr. White is a Director of ERS Group and manages the firm's Washington, D.C. office. He has been with ERS Group since 1993. His practice areas cover all aspects of employment discrimination cases, including: compensation, hiring, promotion, and termination. Dr. White's labor and employment practice also includes EEOC investigations of employers, OFCCP investigations of federal contractors, proactive monitoring of compensation and employee selections, FLSA wage and hour cases, economic damages (single-plaintiff, multi-plaintiff, and class actions), union contract negotiations, and NLRB hearings. Additionally, Dr. White has conducted analyses on mutual fund trading practices, asbestos exposure, and prescription drug pricing.

Dr. White has testified numerous times in local, state, and federal courts.

## **Rick Holt, Ph.D.**

Dr. Holt has been with ERS Group since 2002 and is a Principal in the Washington, D.C. office. He has been extensively involved in projects covering all aspects of employment discrimination cases, including: compensation, hiring, promotion, and termination. He has led projects involving, race/gender/age discrimination, FLSA wage and hour cases, and economic damages (single-plaintiff, multi-plaintiff, and class actions). Dr. Holt specializes in utilizing large and complex databases and the development and estimation of sophisticated statistical/econometric models. Dr. Holt has authored expert reports and has assisted clients in the context of settlement discussions, trial preparation, and consent decree.

