Biost 518 / Biost 515
Applied Biostatistics II / Biostatistics II

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Project Discussion:
Sex Discrimination in University Salaries

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Sex Discrimination in Salaries

- Overall goal
- Specific aims
- Materials and Methods
- Results
- Conclusions

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Overall Goal vs Specific Aims

- Possible overall goals
  - Sex discrimination in general (salaries, UW are examples)
  - Sex discrimination at UW in salaries
    - Existence: Are women paid less?
    - Appropriateness: Are women inappropriately paid less?
      - Historical practices
      - Current practices
        - » Hiring practices
        - » Promotion practices (tenure)
        - » Salary allocation

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Overall Goal vs Specific Aims

- Possible overall goals
  - Sex discrimination in general (salaries, UW are examples)
  - Sex discrimination at UW in salaries
    - Existence: Are women paid less?
    - Appropriateness: Are women inappropriately paid less?
      - Historical practices
      - Current practices
        - » Hiring practices
        - » Promotion practices (tenure)
        - » Salary allocation
- Specific Aims
  - Is there a difference in the distribution of salaries paid to women compared to men who are otherwise comparable?

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Sampling Scheme

- Should we answer the questions through analysis of this data, or just go to the beach?
- What are the problems with this data?

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"Otherwise Similar"

- Adjust for confouders
  - Causally associated with the outcome
    - Not in causal pathway of interest
    - Independent of the predictor of interest
      - In groups that are homogeneous in POI
  - Associated with the POI in the sample
- Adjust for precision variables
  - Causally associated with the outcome
    - Not in causal pathway of interest
  - Not associated with the POI in the sample

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Predictors of Salary: Latent

- Individual attributes
  - Talent
- Preparation
  - Education
  - Certification/ reputation
  - Training
  - Experience (in general, here at UW)
  - Skill
- Duties
  - Productivity/performance
- Networking, inside path, nepotism: discrimination
- Outside forces
  - Supply / demand
  - Institutional resources
  - Cost of living (place, time)

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Predictors of Salary: Measured

- Degree:
  - (education, certification, skill?)
- Year degree:
  - (experience, cost of living, institutional resources)
- Start year:
  - (experience at UW, productivity/performance when also adjusting for year degree)
- Field:
  - (supply/demand, duties?)
- Administrative duties:
  - (Duties, productivity/performance, experience, May need to be interpreted with rank)
- Rank:
  - (experience, productivity/performance)
- Sex:
  - (historical discrimination, current discrimination, cultural differences)

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What Should We Adjust For?

- (Sex will be included in all models)
- Causal pathways of interest? Current vs historical discrimination
  - Rank
  - Administrative duties
  - Field
  - Start year
  - Year of degree
  - Degree

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Secondary Questions

- More directed at looking at mechanisms of discrimination
- Starting salaries
- Raises
- Promotions

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Methods of Analysis: Question #1

- Discrimination in salaries in 1995
- Summary measures
  - Mean?
  - Geometric mean?
  - Others?
- Contrasts across groups
  - Difference
  - Ratios
- Modeling covariates
  - Categorical variables: Sex, Admin, Field, Degree, Rank
    - Dummy variables
  - Continuous variables: Year of degree, Starting year
    - Untransformed, log transformed, linear splines, dummy variables
  - Interactions?

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Methods of Analysis: Question #2

- Discrimination in starting salaries
  - Time frame?
- Summary measures (as before)
  - Mean?, Geometric mean? Others?
- Contrasts across groups (as before)
  - Difference? Ratios?
- Modeling covariates
  - Categorical variables: Sex, Admin, Field, Degree, Rank
    - Dummy variables
  - Continuous variables: Year of degree, starting year
    - Untransformed, log transformed, linear splines, dummy variables
  - Interactions?

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Methods of Analysis: Question #3

- Discrimination in raises
  - Time frame?
- Summary measures (as before)
  - Mean?, Geometric mean? Others?
- Contrasts across groups (partially as before)
  - Difference? Ratios?
  - Average of individual years, individual slopes, population slopes
- Modeling covariates
  - Categorical variables: Sex, Admin, Field, Degree, Rank
    - Dummy variables
  - Continuous variables: Year of degree, starting year
    - Untransformed, log transformed, linear splines, dummy variables
  - Interactions?

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Methods of Analysis: Question #4

- Discrimination in promotion from Associate to Full
  - Time frame?
- Summary measures
  - Proportion, odds, hazard
- Contrasts across groups (as before)
  - Difference? Ratios?
- Modeling covariates
  - Categorical variables: Sex, Admin, Field, Degree, Rank
    - Dummy variables
  - Continuous variables: Year of degree, starting year
    - Untransformed, log transformed, linear splines, dummy variables
  - Interactions?

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