Salary analysis

Overall goal
  – Is there lower pay for women due to discrimination?
  – Are women, due to discrimination, paid differently than otherwise similar men who are faculty at a University

Define discrimination
  – Hiring
  – Initial salary
  – Raises, promotions

Why do we care?
  – Higher productivity, better applicant pool
  – Financial repercussions (getting sued)
  – Basic sociology

Are we interested in historical or current discrimination?
  – Current discrimination
  – University couldn't be responsible for past hiring pool
Confounding factors

- Associated with sex in the sample
- Associated with salary (in truth)
  - In truth
  - Not in the causal pathway of interest
  - Independent of the sex effect
- Other possible determinants of salary
  - Talent / Intelligence / Skill
  - Education
  - Training
  - Experience/skill
  - Productivity / Performance
  - Duties
  - Field
  - Economic Supply and Demand
  - State of economy
Specific Aims

1. Does sex bias exist at the university in the most current year available (1995)?
   - Median of salary over the year
   - Mean of salary over the year
   - Number of promotions over the year
   - Number hired that year (proportion)
   - Stratified by position: Assistant, Associate, Full
   - Correlation in our outcomes

2. Has sex bias existed in the starting salaries of faculty members (i.e., salaries in the year hired)?
   - Means, median starting salaries
   - Correlation
   - First year in academics
   - Stratified by degree
   - Inflation: Put everything in 1992 dollars
   - Difference in demand over time

3. Has sex bias existed in granting salary increases between 1976 and 1995?
     - What if you aren't there for 20 years? Missing data problem
     - Yearly percent increase, and then average it (Don't do this!)
   - Summarize all of an individual's salary information using simple linear regression
     - Estimate the intercept and the slope for each subject
     - Compare the slopes statistically
Slopes are independent observations on each subject

Multiplicative versus additive models

Do you care about mean changes in salary, or fold changes in salary?

4. Has sex bias existed in granting promotions from Associate Professor to Full Professor?

   Of those who are Associate, what proportion were promoted to Full

   Control for difference proportions of associate professor by gender

   Time to promotion

5. Overall, how would you answer the question: Is there sex bias in salaries at the university? What issues are involved in attempting to generalize your results?
Consider variables available in the dataset and categorize as

- **Outcome**
  - Salary

- **Predictor of interest**
  - Sex

- **Effect modifiers**
  - Rank
  - Degree
  - (Race)
  - Field
  - Don't consider any effect modifiers

- **Potential confounders**
  - Type of degree
  - Starting degree
  - Field
  - Rank
  - Admin

- **Precision variables**
  - Admin

- **Surrogates of the response**
• none in this dataset

• Irrelevant variables
  ○ eliminate any of these if they existed
  ○