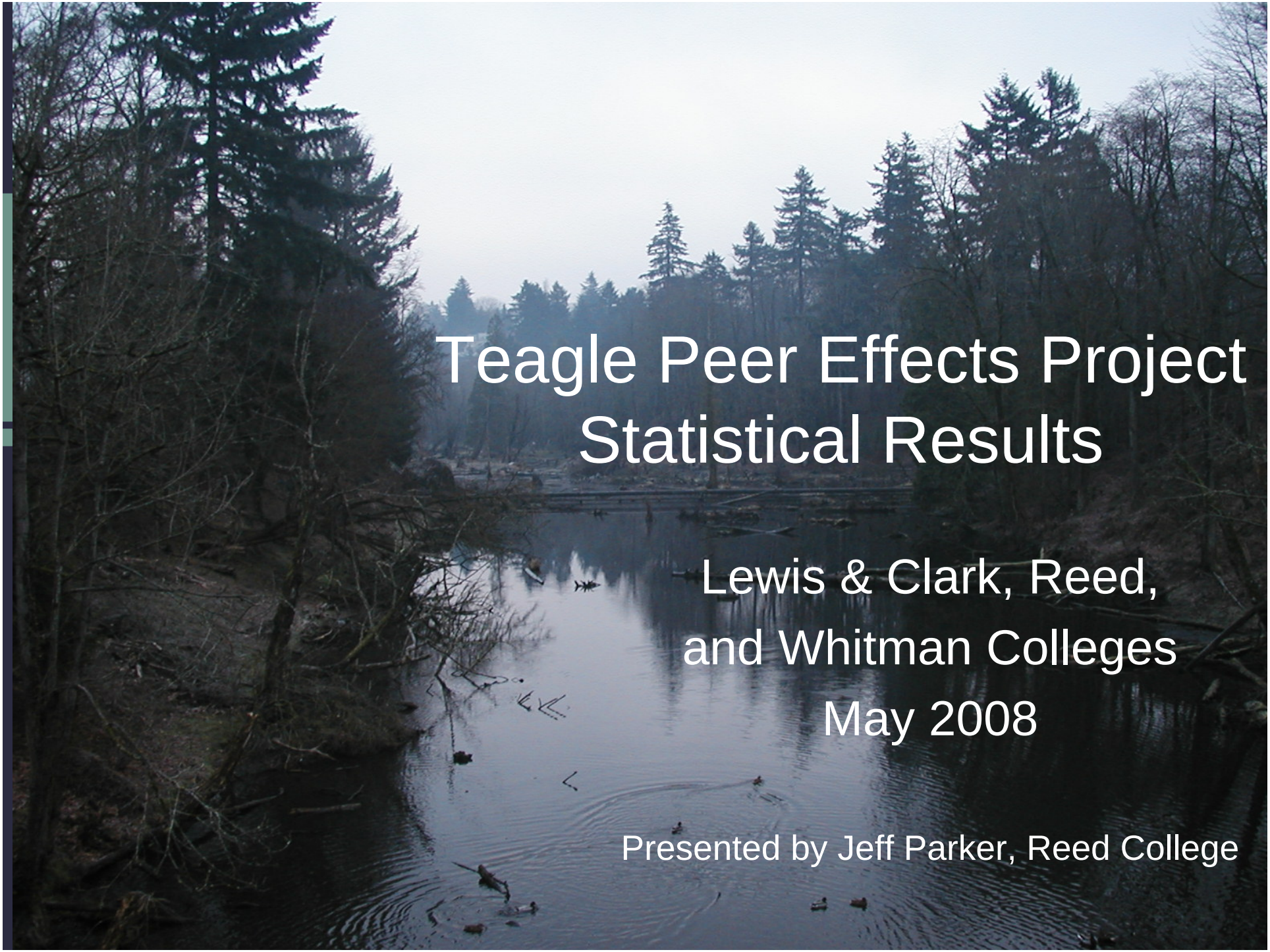


Teagle Peer Effects Project Statistical Results

Lewis & Clark, Reed,
and Whitman Colleges
May 2008

Presented by Jeff Parker, Reed College

Statistical research

- Complement anecdotal interview evidence with formal statistical analysis
- Examine testable hypotheses about effects of measurable peer characteristics on measurable student outcomes

Strategy for analysis

- Measure individual student ability
- Use individually measured abilities to characterize distribution of abilities of core-course classes
- Test whether various aspects of class peer distribution affect student outcomes, controlling for student's own ability

Crude learning model

Crude learning model: Inputs

- Own and peers':
  - Personality
  - Attitude
  - Interest in courses
  - Open-mindedness
  - Ability

Crude learning model: Inputs

Measurable Inputs:

- Personality
- Attitude
- Interest in courses
- Open-mindedness
- Potential academic ability measured through admission credentials

Measuring academic ability

- SAT scores
- High-school GPA
- Class rank
- Admission ratings

Combined into single ability measure:

Predicted college GPA

Crude learning model: outcomes

- Learning in individual courses
- Overall success in college
- Student satisfaction
- Career advancement
- Lifetime happiness
- Attainment of heaven …

Crude learning model: outcomes

Measurable Outcomes

- Learning in individual courses
- Overall success in college
- Student satisfaction
- Career advancement
- Lifetime happiness
- Attainment of heaven …

Statistical outcome measures

- College GPA
- GPA in core-related courses
- First/second-year GPA
- Persistence to graduation
- *Not core-course grades*

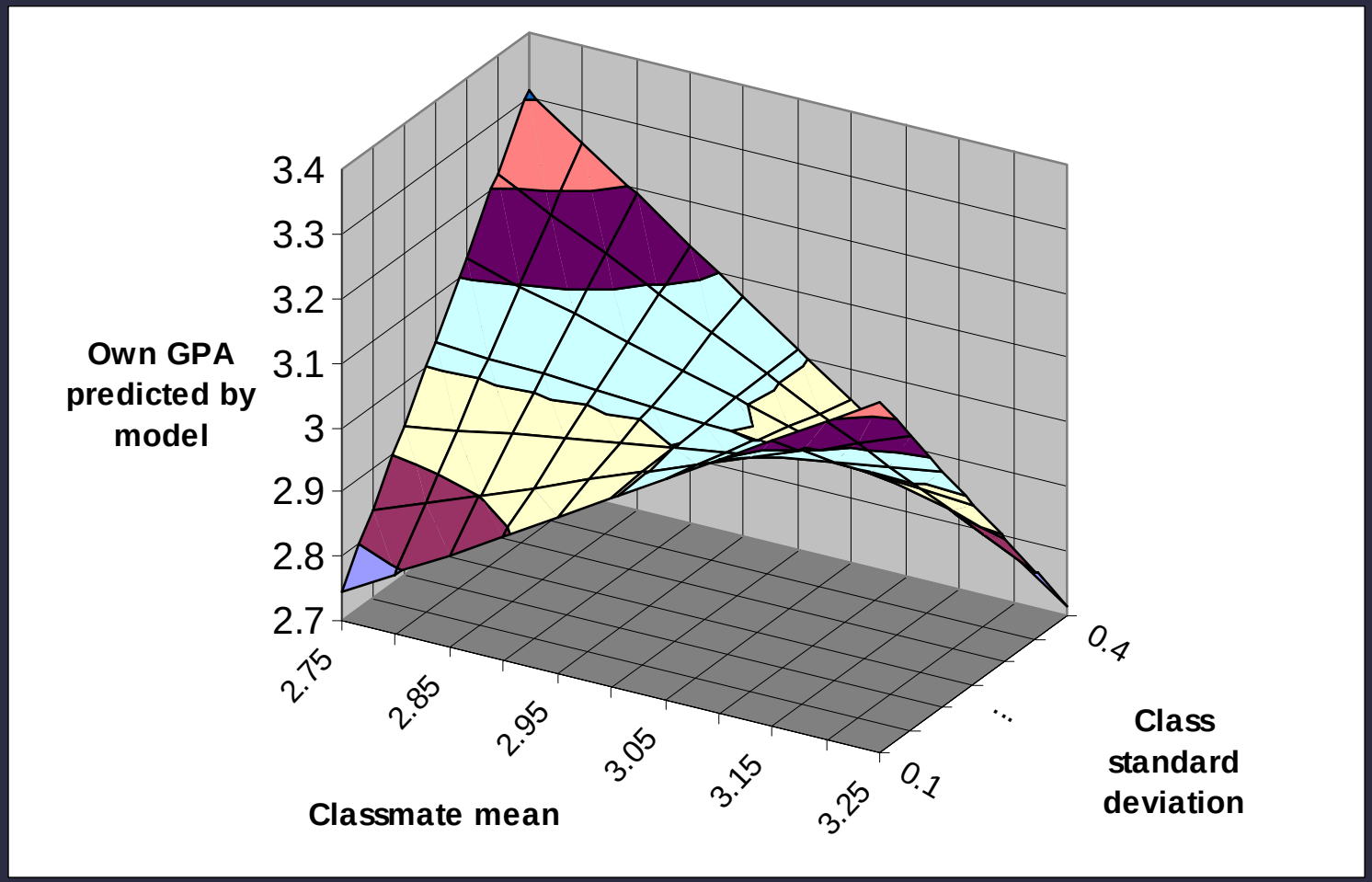
Testable Hypotheses about Ability-Related Peer Effects

- Do able peers promote effective learning?
- Is high in-class variation in ability bad … or good?
- Does learning depend on one's position in the classroom distribution?
- Is learning enhanced by having more students who are "like you"?
- Is learning affected by class demographics: diversity or gender effects?

Central statistical result

Effects of core-course peer ability on subsequent academic performance are small and not consistent across three schools

Details: Ability levels and dispersion



Effects of Position in Distribution

- Position in class distribution
  - Positive and statistically significant effect at Whitman and sometimes at Lewis & Clark
  - Positive but not statistically significant for Reed
  - Stronger for males than females
- Implication: Students who are academically stronger than classmates overachieve relative to those who are weaker than their peers.

“Like-me” student effects

- Top students seem to gain from having more top students in class (Whitman, mean/variance effect at Reed, L&C)
- Lower-middle-level students seem to be hurt by having more students like themselves.

Gender/minority/athlete effects

- Little effect from gender distribution
  - Earlier work for Reed found strong positive effect of women on women
- Too few minorities and internationals to examine separate effects
- More athletes seems to lower achievement of men and other athletes (L&C only)

Tentative Conclusions

- Do better core-course classmates improve your GPA?
  - Maybe a little, if you're in a uniformly good class
  - Maybe a little, if you're a very good student
- Does it help to be better than average in your core class?
  - Maybe, especially if you're male

Implications for Peer Effects

- Not a compelling case from our data for pervasive and strong peer effects, but…

Implications for Peer Effects

- Not a compelling case from our data for pervasive and strong peer effects, but…
- … we test only one indirect way that peer effects might show up
  - Maybe core courses aren't that important for success in other courses
  - Maybe peer interactions in core courses are less ability-based than in "problem-set courses"

Future Lines of Research

- Extend interviews to students
- Try to quantify the personal characteristics that interviewees thought were important:
  - Surveys of entering students
    - Ask about personality, attitude, goals, etc.
  - Surveys at end of core course
    - Ask which peers were beneficial, which were destructive

Some Open Questions

- Do core-course peer effects extend beyond the core course?
- How can we measure the classmate peer characteristics that matter?
- What are the best outcome measures to examine to look for peer effects?
- Are there other, better approaches to investigating classmate peer effects?