Assessing the Impact of Clerkships on the Growth of Clinical Knowledge

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Outline and Disclaimer

- **Outline**
  - Study Background
  - Methods
  - Results
  - Discussion

- **Funding Source and Disclaimer**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors

Study background

- Previous studies have shown that students improve in incremental performance on
  - multiple choice examinations of relevant knowledge for clerkships
  - in self-assessments of competency after the clerkship rotation.

However,

- Medical schools vary widely in delivery, sequence, and evaluation of students during their third-year rotations.
- Grading across different clerkships within an individual school is not comparable, thereby complicating the evaluation of a clerkship's efficacy.

Research Question

- **Study purpose**

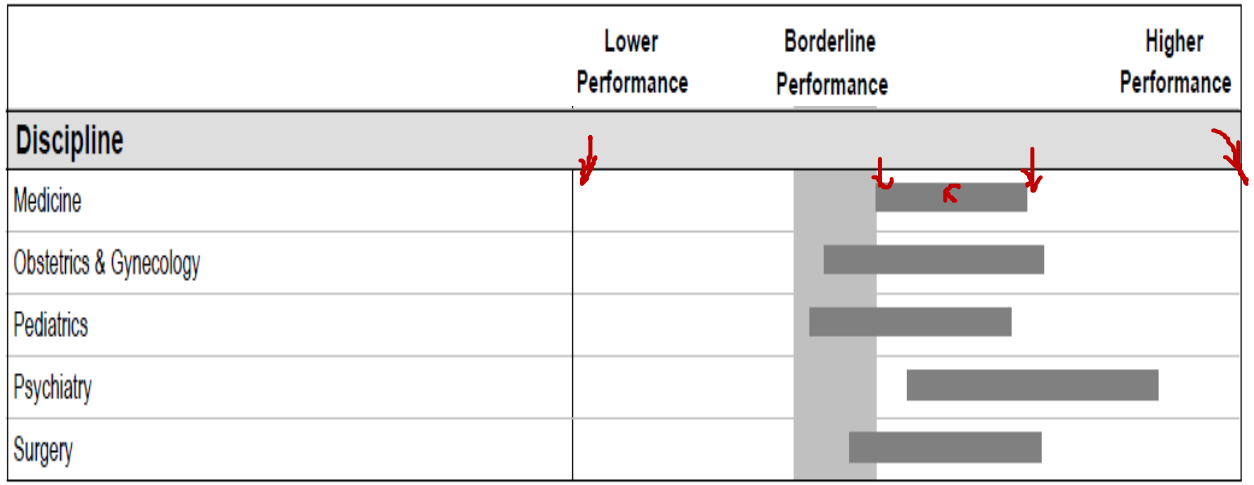
The goal of this study was to assess the impact of these **clerkships** on students' **growth in clinical knowledge** using a specific model of longitudinal data analysis.

- **Research Question**

How do disciplinary clerkships impact medical students' growth in clinical knowledge?

Methods

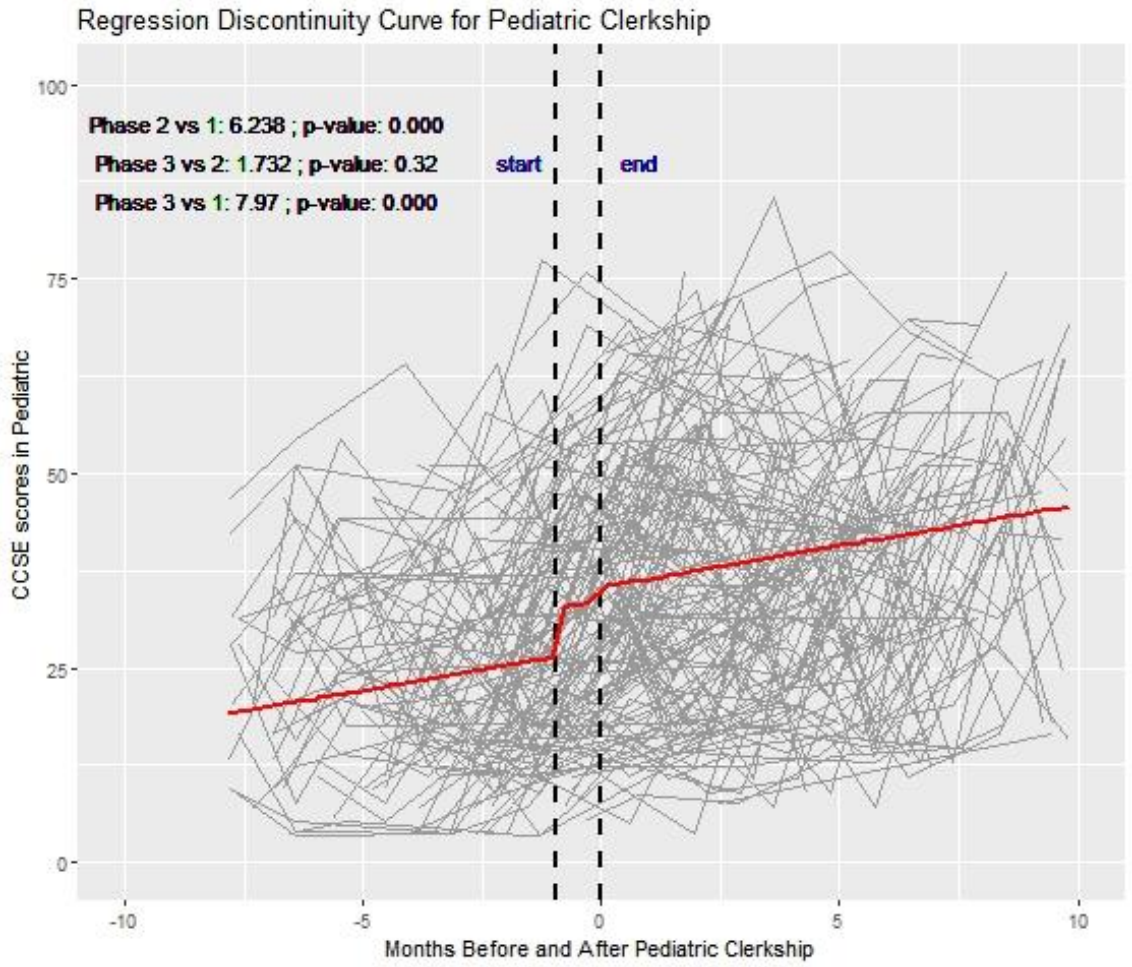
- **155 medical students matriculated in 2016**
- **Study Design**
  - NBME Comprehensive Clinical Science Examination (CCSE)
    - Twice a semester during the three semesters of the third year
    - Scores were extracted from each student's CCSE reports
  - Disciplinary Clerkships
    - OB/GYN
    - Medicine
    - Pediatrics
    - Psychiatry
    - Surgery



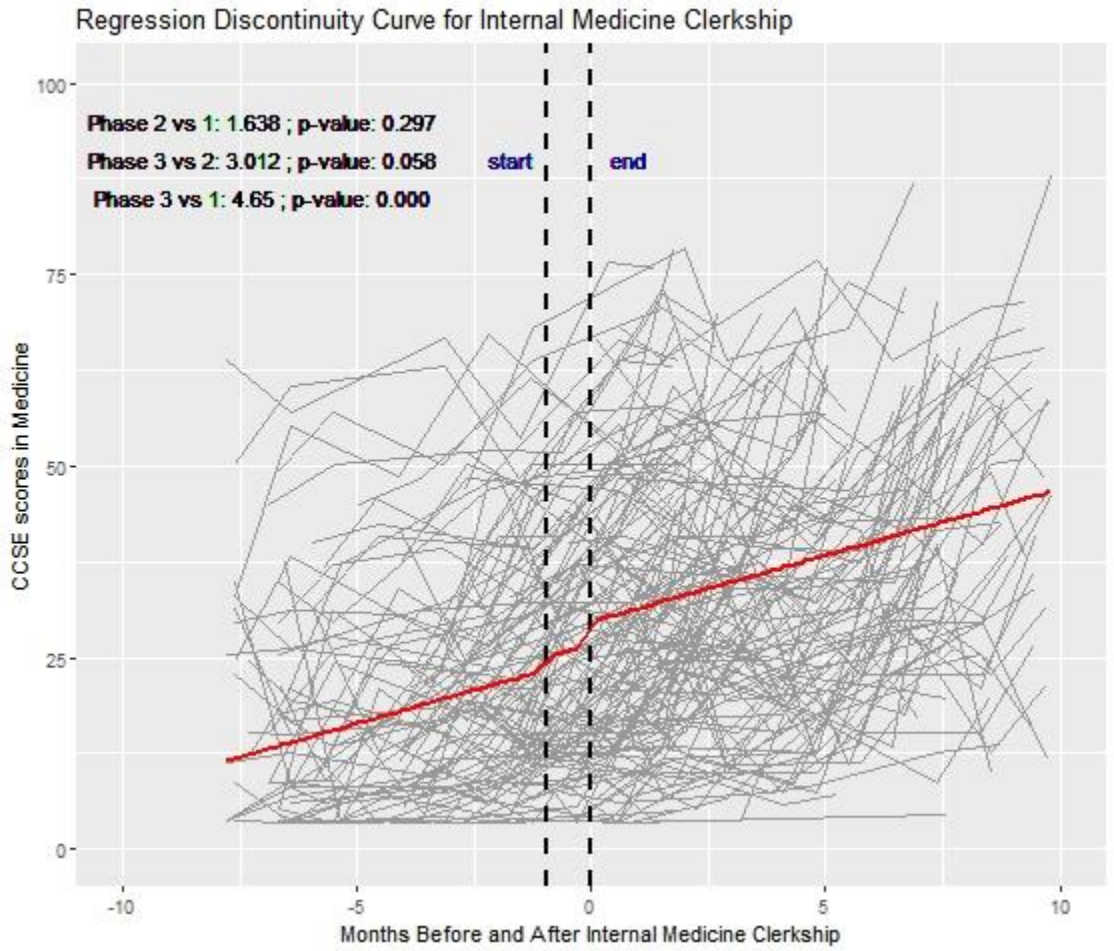
- **Statistical Methods**
  - Regression discontinuity
    - examined separately
    - the differences in regression intercepts
  - Define the time scale with reference to the disciplinary clerkship:
    - Phase 1: before the disciplinary clerkship
    - Phase 2: during the disciplinary clerkship
    - Phase 3: after the disciplinary clerkship

- **Statistical Software:**
  - R 3.6.3 version
  - *lmerTest* package

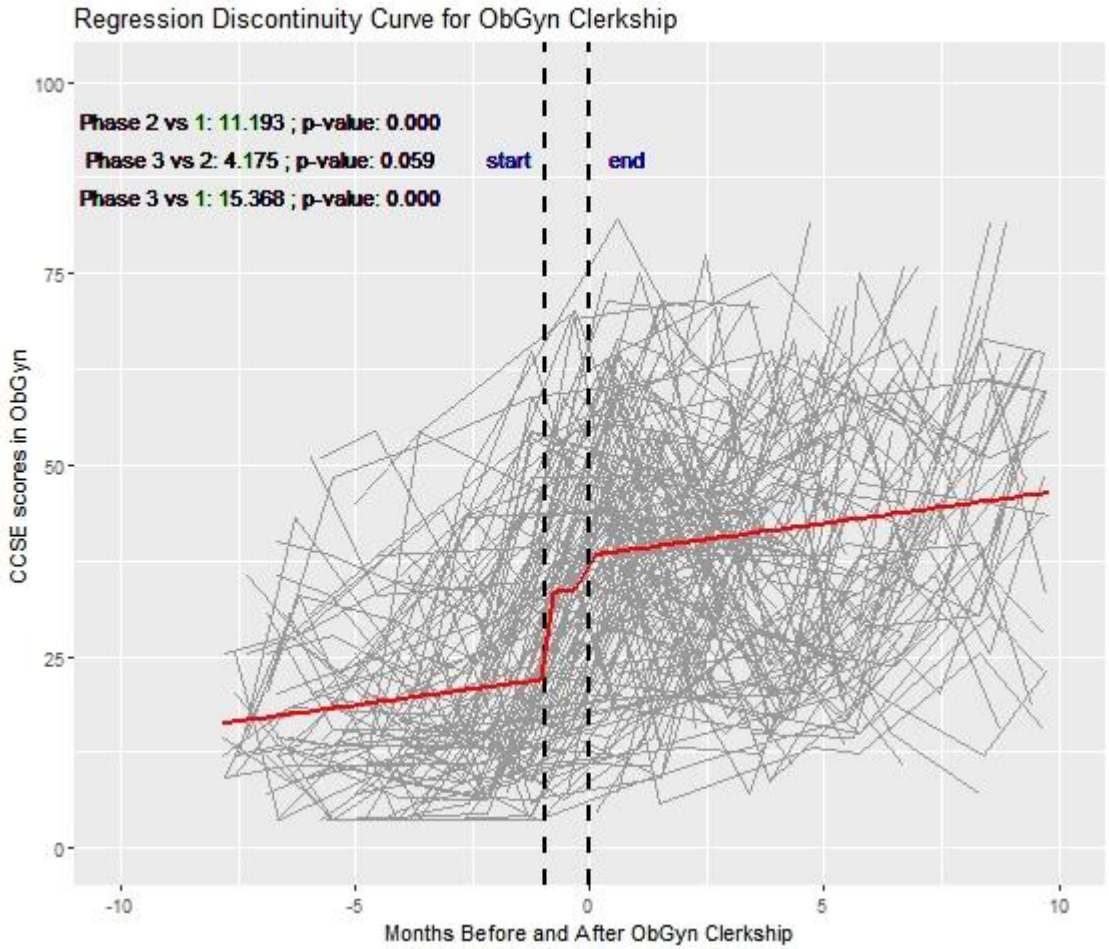
Results
- Pediatrics



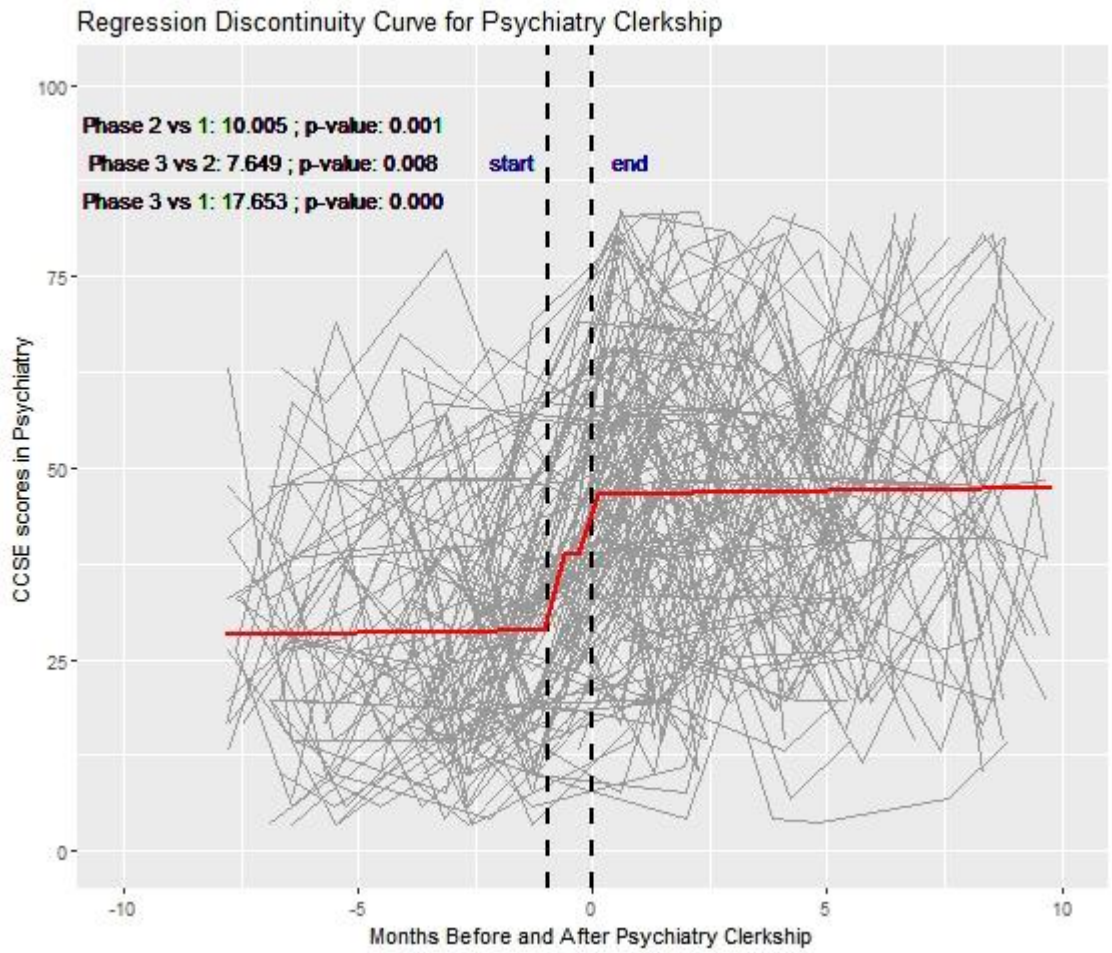
Results Medicine



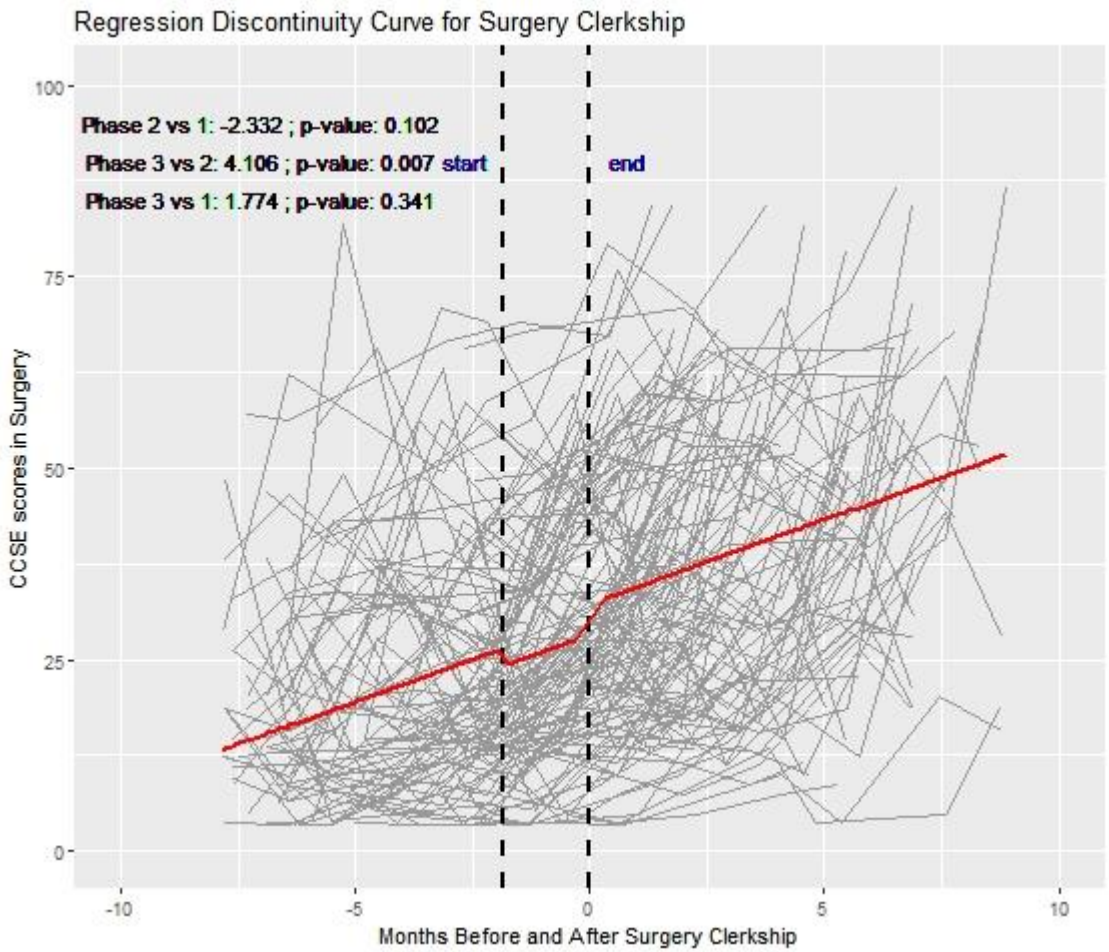
Results -Ob/Gyn



Results
- Psychiatry



Results
- Surgery



Conclusion and Significance

- Disciplinary knowledge increased significantly ($p < 0.001$) pre to post clerkship in all disciplines except surgery. The performance increase was largest in psychiatry and Ob/Gyn, where it exceeded 10% in CCSE disciplinary scores .

- As curriculum reform in medical schools focuses on the change of curriculum structure and instructional methods to problem-based and scenario-based designs, assessment and evaluation methods need to be changed accordingly.

- Progress testing is a powerful tool for program evaluation as well as for feedback and assessment.

- This study demonstrated that regression discontinuity analysis can be applied to quantify the impact of clerkships on students' clinical knowledge in different disciplines, as well as to examine the growth before and after the clerkship rotation period using progress testing in the formative assessment.

- Quantifying the effectiveness of curriculum activities, such as tutoring, intersession, or clerkship rotation as in our example, can provide feedback to instructors, proctors, staff with respect to academic achievement, which can be used for further revision of the content of the clerkship.

- The results provide particularly useful information for medical schools as to how medical students acquire clinical knowledge.

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