

Pre-Analysis Plan

1. General Information:

- a. **Title:** Inclusive Classrooms and Equitable Student Success: A Faculty Experiment
- b. **Principal Investigators:**
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 - iii. David Deming – Professor of Public Policy, Harvard Kennedy School and Professor, Harvard Graduate School of Education
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- c. **External Partner Institution:** Reynolds Community College

2. Introduction

- a. **Abstract:** Researchers have documented racial and gender gaps in college enrollment decisions, choice of major, degree attainment, and earnings—despite narrowing gaps in test scores and course-taking in K-12 settings. Implicit racial and gender stereotypes of faculty members may affect their interactions with students and exacerbate these gaps, even without awareness or intent to harm members of underrepresented groups. Yet, there is no causal evidence on the extent to which faculty’s implicit bias contributes to these educational disparities and which types of interventions are cost-effective in mitigating any harmful effects of implicit bias on student achievement gaps. This study aims to address implicit bias of faculty members through the collaboration between psychologists and economists. First, we plan to understand the relationship between faculty’s implicit bias and gaps in student achievement, completion, and economic mobility using a newly constructed dataset with schools’ student-level and faculty-level administrative data, and faculty’s implicit association test (IAT) results. Second, we plan to implement a randomized field experiment to evaluate the effects of faculty implicit bias trainings on students’ academic performance. Due to schools’ adjustments to online education in March 2020, we will pilot the study using an online format in Fall 2020 at Reynolds Community College. The pilot will take place between October 7-December 20, 2020.
- b. **Background:** Faculty play important roles in students’ degree aspirations, academic success, and career prospects. However, students of color and women may have fewer or different interactions with faculty. Several studies suggest that gaps in student achievement may be traced to faculty demographics, including race and gender. Researchers documented faculty’s preferences for and responsiveness to white males over any other race-gender combination in online classroom settings, emails requesting faculty meetings, and resumes for research positions (Moss-Racusin et al., 2012; Milkman, Akinola, and Chugh., 2015; Baker et al., 2018). Yet, faculty often lack access to teaching tools and feedback to ensure their instructional and mentorship decisions close---rather than exacerbate---students' achievement gaps.

We will evaluate the effectiveness a set of teaching tools that raise faculty's awareness about unconscious attitudes and behavior on students' perceptions of ability, course and major selection, completion, and mobility. We will pilot our RCT in partnership with Reynolds Community College in Virginia.

3. Study Design

- a. **Hypotheses:** Do implicit bias training and data-driven feedback affect the behavior of faculty members? Do they impact students' performance? Do they mitigate racial and gender gaps in education?
- b. **Primary Outcomes:** Primary outcomes will be measured using administrative information shared by our partner institution. Long-term measures include college persistence, completion, and mobility—including gender and race gaps within each of those measures. Shorter-term measures include students' course grades, subsequent course selection, perceptions of classroom climate, and choice of major.
- c. **Secondary Outcomes:** Secondary outcomes will be measured through surveys. Secondary outcomes include measures of students' self-reported aspirations for future educational and occupational career, self-confidence in own ability in the specific subject, questions on interactions with faculty, and perceptions of classroom inclusion and belonging.

4. Details of the Study:

- a. **Methodology:** Randomized Control Trial
- b. **Geographic region:** Richmond, VA.
- c. **Research population:** The research population will include faculty teaching courses in the Fall 2020 term at Reynolds Community College and students enrolled in these courses. Reynolds agreed to share administrative information on both faculty and students. We will also have access to information obtained from surveys implemented at the baseline and endline periods.
- d. **Expected timeline:**
 - i. Nov 2019-Oct 2020: Pre intervention analysis (IRB approval, DUA with partner institution, survey design, pre intervention data cleaning and analysis).
 - ii. Oct/2020- Dec/2020: Intervention (Pilot).
 - iii. Jan-Apr 2021: Post intervention data cleaning and analysis.

5. Experimental Design

- a. **Intervention Details:** The study intends to evaluate how providing implicit bias training to higher education instructors impacts students' outcomes. We will offer---in the fall of 2020---an implicit bias training to a randomly selected sample of instructors teaching courses at the Fall 2020 term on Reynolds Community College. The training is designed to expose faculty members to their own implicit biases and provide them with tools to adjust their automatic pattern of thinking with the goal of mitigating any biased behavior. This treatment--- implemented by psychologists--- will be based on scientific evidence and previous research results and it will adopt a non-judgmental approach that focuses on the recipients' self-interest and

- organizational interest. Follow up emails will be sent at most bi-weekly to remind instructors of training content to raise awareness about potentially biased behavior. We will then evaluate the impact of interacting with instructors exposed to training on students' outcomes. Due to schools' adjustments to online education in March 2020, we will pilot the study using an online format in Fall 2020 at Reynolds Community College, randomizing across instructors from all departments.
- b. **Recruitment and Compliance:** The recruitment for treatment will come from the university leadership (President or Provost) that oversees faculty to inform faculty about the initiative at large and follow-up invitations to the trainings will come from deans and department chairs. To prevent non-compliance in the control group for the online treatments, we will password protect access to the training and will only allow invited faculty to access the online trainings. The interventions will be blind to students so they will not receive information that these trainings are taking place or if their faculty participated in them.
 - c. **Data Collection and Sources of Data:** Reynolds has agreed to share administrative data with the Research Team. Survey data will be collected through online Qualtrics surveys sent to faculty and students by Reynolds's leadership.

6. Experiment characteristics

- a. **Randomization method:** randomization by computer
- b. **Randomization unit:** individual faculty level.
- c. **Was the treatment clustered?** No.
- d. **Sample Size (number of clusters):** We will include about 330 instructors in our randomization. This number represents all instructors teaching at Reynolds the Fall 2020.
- e. **Sample size (planned number of observations):** For the online pilot at Reynolds community college in Fall 2020, we will include 328 instructors across all departments in our randomization. We can observe for these instructors across 1,000 classes and we also have information on over 6,000 students.
- f. **Sample size (sample size by treatment arms):** For the online pilot at Reynolds community college in Fall 2020, we will have 164 instructors assigned to treatment and 164 assigned to the control group. We will stratify based on faculty's baseline survey completion such that half of the survey completers are assigned to treatment and half are assigned to the control group.
- g. **MDE:** Using administrative information from previous terms, we were able to simulate the Minimum Detectable Effect considering different measures of students' performance. Our power calculations suggest that we will be able to detect an impact 3 percent of a standard deviation for outcomes measured at the student-class level (e.g., grade) and from 13 to 18 percent of a standard deviation for outcomes measured at the instructor-class level (e.g., black-white grade gap, hispanic-white grade gap). To compute MDEs, we assumed a significance level of 5 percent and an 80 percent power for the overall treatment.

7. References

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