

Pre-Analysis Plan

1. General Information:

- a. **Title:** Inclusive Classrooms and Equitable Student Success: A Faculty Experiment
- b. **Principal Investigators:**
 - i. Michela Carlana – Assistant Professor of Public Policy, Harvard Kennedy School
 - ii. Lena Shi, Ph.D. Student, Harvard Graduate School of Education
 - iii. David Deming – Professor of Public Policy, Harvard Kennedy School and Professor, Harvard Graduate School of Education
 - iv. Mahzarin R. Banaji - Richard Clarke Cabot Professor of Social Ethics, Department of Psychology, Harvard University
- c. **External Partner Institution:** Portland Community College

2. Introduction

- a. **Abstract:** Do implicit bias training and data-driven feedback affect the behavior of faculty members and do they mitigate racial and gender gaps in education? We address these questions using a field experiment that randomly assigns faculty to a two-hour in-person implicit bias training or a control group. The training and follow-up interventions are designed to expose faculty members to unconscious bias, increase awareness on how it may affect their attitudes, and advise faculty on how to manage biases. The second part of the intervention will include a deeper focus on biased behavior in the classroom. This includes informing faculty about the evidence documenting (A) bias in grading, advising and communication, (B) data from their institution to show whether there are systematic associations between faculty characteristics and student outcomes, and (C) tips on what may work to increase inclusion in the classroom. Following implicit bias training, faculty will receive reminders throughout the quarter to reaffirm the content they covered during trainings through videos, tips, and their own responses on explicit attitudes. Our pilot focuses on math, reading, and writing departments in the largest community college system in Oregon.
- 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 Oregon's largest community college system, Portland Community College (PCC).

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:** Portland, OR.
- c. **Research population:** The research population will include faculty teaching courses offered by the Math, Reading and Writing departments in the Spring term at Portland Community College and students enrolled in these courses. PCC 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-Feb 2020: Pre intervention analysis (IRB approval, DUA with partner institution, survey design, pre intervention data cleaning and analysis).
 - ii. Apr/13- Apr/17: Intervention (Pilot).
 - iii. Apr-Jun 2020: Post intervention data cleaning and analysis.

5. Experimental Design

- a. **Intervention Details:** This evidence-based intervention is designed to expose faculty members to unconscious bias, increase awareness on how it may affect their attitudes, and advise faculty on how to manage biases (Hillard et al, 2013; Carnes et al., 2012; Eberhardt, 2019). Faculty assigned to the treatment group will be invited for an in-person implicit bias training. The implicit bias training will be implemented by trained psychologists who will follow a precise protocol. It will include approximately 2 hours of in-person training for the faculty members, organized in one day and over lunch to encourage participation. First, the treatments will inform teachers about their own biases following interventions that raise faculty's awareness about implicit biases and why it matters. A recent study showed that teachers who were informed about their implicit bias against immigrants closed their gaps in

- grading (Alesina et al., 2018). Second, the treatments will share examples of potentially biased behavior that are most relevant to teachers, prompting more attention and focus before acting on those behaviors. Third, trainings will also emphasize efforts to identify positive associations and learn more about students and to find common similarities, bypassing appearance and countering stereotypes. Following implicit bias training, faculty will receive reminders throughout the quarter to reaffirm the content they covered during trainings through videos, tips, and their own responses on explicit attitudes.
- 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. The strategy for Administration-led messaging was well-received during the pilot. To boost compliance among the faculty assigned to treatment and ensure the ex-ante more biased individuals participate, we will provide incentives for participating through a meal, raffle for gift cards, and compensate part-time faculty with \$75. We are also scheduling the trainings when there is no course conflict. To prevent non-compliance in the control group for the in-person and online treatments, we will check ID's to ensure participants come from the assigned treatment group. 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:** PCC 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 PCC'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 300 instructors in our randomization. This number represents all instructors teaching courses at the Math, Reading and Writing departments at Portland Community College (PCC) in the Spring of 2020.
- e. **Sample size (planned number of observations):** We will have information on 300 instructors (unit of randomization). We will also have information on approximately 10,500 students. Each student is enrolled, on average, in 1.8 courses at the Math, Writing and Reading Departments.
- f. **Sample size (sample size by treatment arms):** We will have approximately 150 instructors in the treatment group and 150 instructors in 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 of approximately 5 percent of a standard deviation for outcomes measured at the student-level (e.g., term GPA and attainment), 10 percent of a standard deviation for

outcomes measured at the student-class level (e.g., grade) and 18 percent of a standard deviation for outcomes measured at the instructor-class level (e.g., black-white grade gap, hispanic-white grade gap, female-male grade gap, average grade of black students, average grade of hispanic students, and average grade of female students). 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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Milkman, K.L., Akinola, M., Chugh, D., (2015). What happens before? A field experiment exploring how pay and representation differentially shape bias on the pathway into organizations. *Journal of Applied Psychology* 100, 1678–1712.

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