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**Rising Scholars Conference  
Economics and Policy Student Research Presentations**

**Diag Davenport**  
diag@uchicago.edu

**University of Chicago**

Diag (DEE - og) is a Behavioral Science PhD student at Chicago Booth. His research uses tools from economics, psychology, and machine learning to tackle social and economic problems. In particular, much of his research focuses on building ML tools to complement and evaluate real decisions in diverse settings from monetary policy and venture capital investing to criminal justice and social media.

**ABSTRACT:**

Recommender Systems Amplify Implicit Biases: Theory, Experiment and Evidence from Facebook  
Amanda Agan, Diag Davenport, Jens Ludwig, Sendhil Mullainathan

Algorithms are forced to learn what we like from what we do, and so are vulnerable to the wedgewidely documented by psychologists between stated preferences and actual behavior, particularly in our behaviors that are biased against people not like us. We combine theory, lab experiments, and an international audit study of Facebook to demonstrate when algorithms are biased against out-groups. First we present a theoretical model showing how algorithms can exacerbate human biases by curating choice sets that over-represent in-group members, which will be particularly pronounced for our less deliberate behaviors where in-group favoritism is most likely to creep in. The result is that in-groups are doubly favored: the algorithm includes more of the in-group into our choice set; and we continue to favor them in choosing from that set. We then test the implications of the model in two widely-used Facebook algorithms: Newsfeed, which algorithmically orders posts; and People You May Know (PYMK) which recommends new friends. Consistent with the predictions of the model, we find evidence of in-group bias with Newsfeed; for example in-group posts in the bottom quartile of the user's stated preference distribution have about the same average ranking in Newsfeed as out-group posts in the next quartile of the preference distribution. But we find no evidence of bias with PYMK, which involves more deliberation than interacting with a post. These results hold even when we control for the user's self-reported preferences, such as interest in a post, or objective factors such as number of mutual friends. Next, we demonstrate the generality of the underlying psychology and its interaction with algorithmic processes by replicating the results in a very different context, India, with a very different kind of in-group bias, religion. Finally, we explore one key mechanism and suggest potential interventions through a series of lab experiments in which we train algorithms on data from people who are either rushing through decisions -- and are thus relying on subconscious inputs -- or thinking carefully through their choices. We show that when people slow down and deliberate, the algorithms they feed are dramatically less biased.

**Carolina Lopez**  
carolina\_lopez@brown.edu

**Brown University**

I am a Ph.D. candidate in the Department of Economics at Brown University. My main research fields are development economics and applied microeconomics, focusing on education and human capital. I earned a BA in Economics at Universidad Nacional de Salta (Salta, Argentina), an MA in Economics at Universidad Nacional de La Plata (UNLP, Argentina) and I worked as a research assistant and as a junior researcher at Centro de Estudios Distributivos, Laborales y Sociales (CEDLAS) at UNLP.

**ABSTRACT:**

Misperceptions and High School Graduation: Experimental Evidence on Information Interventions from Argentina\*

Low high-school graduation rates are a central challenge for the development of human capital in developing countries. I conducted an experiment in Salta, Argentina, to test whether students in their senior year are more likely to graduate after receiving targeted information about their chances of graduation conditional on their academic standing at the beginning of that year. I test how baseline perceptions about their own likelihood of graduation are updated after receiving this treatment and how the update in the perceptions affects the probability of graduation. I observe that a quick and cheap information intervention (conducted in a single visit to schools) increases timely high school graduation in 5 percentage points, a 10 percent increase relative to the control group. The worst performing students, with low perception of probability of graduation, are those who respond most to the treatment. In addition, I test a returns-to-education information intervention, and I find higher effects to previous studies (10 percentage points). Importantly, I find that both treatment arms also increase the probability of university enrollment in 5 percentage points (more than 30 percent with respect to the control group). The positive effects of these information interventions indicate how a relatively quick, cheap, and scaleable intervention could generate large effects on a vulnerable population at risk of failing to complete high school on time. This project is relevant to inform policy strategies to increase the demand for high school diplomas among teenagers, especially the disadvantaged ones. Although access to the educational system is not restricted in many settings, youths' lack of information can make them decide to invest less than the optimum level in education, which in the medium run will limit their economic opportunities. This paper provides evidence of a factor that could explain underinvestment in education, which is the lack of knowledge of how to efficiently transform inputs into outcomes, by providing accurate information on how to improve chances of graduation depending on students' academic standing at the beginning of their senior year.

\*Brown University, Department of Economics. Email: carolina\_lopez@brown.edu. I am incredibly thankful to Pedro Dal Bó, Andrew Foster, Anja Sautmann, Bryce Steinberg, and Neil Thakral for their support and encouragement. The field experiment would not have been possible without the authorization and support of the Directorate of Secondary Education of the Ministry of Education of Salta and the authorities of each participant school. The experiment was approved by Brown University IRB and it was registered at AEA RCT registry (RCT ID: AEARCTR-0001299). All errors are my own.

**Ruchi Mahadeshwar**  
ruchi\_mahadeshwar@brown.edu

**Brown University**

Ruchi Mahadeshwar is a third-year economics PhD student at Brown University. Her research interests fall in applied microeconomics, with interests in health, labor, and public economics questions. In 2020, she received the NIH T32 Award and, in 2021, the NSF Graduate Research Fellowship.

**ABSTRACT:**

This paper examines the impact of access to a disruptive new diagnostic technology - HIV self-tests - on transactional sex and the risk-income trade-off faced by women. Self-tests, which enable individuals to learn their HIV status within 20 minutes by testing themselves privately, can eliminate the need to travel to a health facility and circumvent various barriers to HIV testing. Importantly, self-tests make it easier and less costly to not only learn one's own HIV status, but also the status of one's current or potential sexual partners. Because self-tests are highly portable, our study leverages the potential for women who receive multiple self-tests to offer them voluntarily and at their discretion to current and potential sexual partners. In formative work prior to this study, we found that this "secondary distribution" approach was safe, feasible, and showed promise as a strategy for promoting partner and couples testing (Thirumurthy et al. 2016; Maman et al. 2017; Agot et al. 2018). With numerous studies indicating that self-testing has high acceptability and safety in diverse populations and settings (Johnson et al. 2014; WHO 2016), countries in SSA have followed recent WHO guidelines and begun to scale-up access to self-tests (WHO 2019). To our knowledge, no large-scale studies have examined how sustained access to these diagnostics can resolve the problem of incomplete and asymmetric information and affect

women's decision-making in transactional sex encounters. We develop a simple theoretical framework that yields empirically testable predictions about the effects of access to self-tests in transactional sex.

We investigate the effects of access to free HIV self-tests and resulting knowledge on sexual partners' HIV risk on women's sexual and economic decision-making using data on ~11,000 transactional sex encounters from 2,090 HIV-negative women at high risk of HIV exposure. The data came from a cluster randomized trial (the Jikinge trial) we conducted between 2017-2020 in which women in intervention clusters received multiple free HIV self-tests over 18-24 months along with encouragement to use their discretion and offer tests to their current or potential sexual partner; in control clusters, women were encouraged to tell their partners to seek counselor-administered HIV testing services at nearby health facilities (the status quo option). The trial, which took place in Kenyan communities with high HIV prevalence (15%), focused on high-risk women who reported 2+ partners in the past month. Transactional sex was very common among study participants: over 95% reported ever engaging in it and 67% reported it as a primary or secondary income source. Adolescent girls and young women comprised half the study population and many reported having transactional sex with older men (5+ years older), i.e. partners who were higher risk and more likely to offer compensation for risky sex.

Our results show that access to HIV self-tests reduces incomplete and asymmetric information in women's knowledge of their transactional sex partners' HIV status and substantially alters the risk-income trade-off that they face. We find that women in intervention clusters were 25pp more likely to learn their male partners' HIV status through testing -- a large increase relative to the control group, in which women learned the HIV status of their partners in 29% of transactional sex encounters. This finding is significant for several reasons. It shows that expanded access to self-tests can help women resolve uncertainty about their partners' HIV risk. It also provides suggestive evidence that women have substantial bargaining power to initiate testing with their transactional sex partners. Finally, it demonstrates that the intervention also increases men's knowledge of their own HIV status, an important finding from an HIV prevention standpoint since it shows that a sexual network-based "secondary distribution" approach can promote HIV testing in hard-to-reach populations such as men who engage in transactional sex.

We also find that as a result of the self-testing intervention, there are striking behavioral responses to learning partners' HIV status which are consistent with theoretical predictions. First, women with access to self-tests were significantly more likely to have refused sex or used condoms with partners who tested HIV-positive or those who refused testing. Second, in ex-ante high-risk encounters (i.e., those involving an adolescent girl or young woman and a male partner who was 5+ years older), access to self-tests had seemingly unintended, but theoretically consistent, consequences: using encounter-level data and the RCT design to instrument for learning a partner's HIV status, we find that learning a partner was HIV-negative resulted in a 43pp decrease in condom use and a 64% increase in encounter prices. Consistent with these encounter-level results, we also show that access to self-tests led to a significant increase in women's monthly income from transactional sex but not their overall income. The latter result suggests that women may have reference-point income levels (Camerer et al. 1997) and respond to access to self-tests by substituting other income sources with transactional sex. Third, through HIV testing that was conducted for study participants every 6 months, we show that access to self-tests had no effect on their HIV incidence - a confirmation that the reductions in condom use were not accompanied with higher HIV risk, but also an indication that the intervention alone was not sufficient for reducing women's HIV risk. We also show that several non-HIV related health outcomes that were self-reported (intimate partner violence, pregnancy, and other sexually transmitted infections) were not affected by the intervention. Overall, these findings reveal how access to HIV self-tests alters women's central risk-income trade-off in transactional sex: women may be able to earn more income without having to accept higher HIV risk.

**Roman Rivera**  
rgr2122@columbia.edu

**Columbia University**

I am a 4th year Phd student in Economics at Columbia University. I study crime and policing with a focus on diversity and policy reforms.

**ABSTRACT:**

The Effect of Minority Peers on Future Arrest Quantity and Quality

The costs and consequences of aggressive policing of minorities in the U.S. have become socially and politically salient. Research in economics, sociology, political science, and criminology provides evidence for the differential behavior of police officers from different racial and gender groups. As departments are disproportionately white and male relative to the civilians they police, a common proposal to reform police departments is to increase the shares of minorities in order to reduce aggressive policing. However, as recruitment of more minorities increases, there is little evidence for how these more diverse officers will influence their peers.

In this study, I use data from the second largest police department in the US, the Chicago Police Department (CPD), to study the effect of peer diversity in the police academy on officers' future arrest quantity and quality. Identification of such effects is possible because the CPD assigns recruits to academy cohorts based on randomly determined lottery numbers. Using highly detailed data on officers' daily assignments, arrests, and their arrests' outcomes in court, I am able to recover individual officer propensities to make arrests of various types and qualities.

I find that higher shares of minority (Black, Hispanic, Asian/Native American) peers in the police academy significantly reduce an officer's future propensity to arrest minorities, mainly Blacks, for low-level crimes. Furthermore, this decline in low-level arrests is driven almost entirely by a drop in arrests that are not found guilty in court (i.e., low-quality). Minority peers either have no effect or a small positive effect on arrests for serious crimes.

I find evidence for two main mechanisms. First, white officers are most strongly influenced by minority peers, implying that interracial socialization leading to a reduction in bias or prejudice may be occurring. Second, minority officers are also influenced by minority peers, particularly by older minority peers (who have the lowest preferences for aggressive policing). In addition to other evidence, this indicates that all officers are influenced by their peers' preferences for aggressive policing. I find these effects are generally persistent for at least the first 3 years of an officer's career, and I find that age is a significant moderating factor as younger minority peers have significantly smaller effects (more positive) effects relative to older minority peers.

This study has large implications for research on policing, diversity, and peer effects, and significant policy implications. It provides novel evidence for peer effects of diversity in the police academy as well as a causal determinant of officer's behavior in their future police work. My results relating to age and peer preferences indicate that policies that increase recruitment of diverse police officers who have stronger preferences for aggressive policing (i.e., young recruits) may have self-defeating effects.