Gustavo Diaz, Northwestern Political Science, Scott Hall ste 224, 601 University Place, Evanston IL 60208

Open Rank Search, Political Methodology

Dear Members of the Search Committee,

I write to express my interest in your Open Rank Search in Political Methodology. I am an Assistant Professor of Instruction in the Department of Political Science at Northwestern University, where I teach courses on statistics, statistical programming, and computational social science and conduct research on quantitative methods and social science research design. I received my PhD in Political Science from the University of Illinois Urbana-Champaign in 2021. My work is published or forthcoming in outlets including the *British Journal of Political Science*, *World Development*, and the *Journal of Experimental Political Science*. I also have work under **revise and resubmit** at the *American Political Science Review*.

My research agenda focuses on developing tools that researchers can adopt to improve statistical precision before data collection. This is overlooked in the statistics, econometrics, and political methodology literature in favor of identifying unbiased estimators. Implicitly, this literature assumes that one can improve statistical precision by increasing sample size. This is not feasible in many social science applications due to resource limitations. Even when resource considerations are not a concern, the researcher has an ethical mandate to identify a research design that maximizes benefits and minimizes harm at the lowest possible cost.

Focusing on the design and analysis of experiments, this agenda focuses in cases where one can apparently improve statistical precision without sacrificing unbiasedness. As I show in my work, this usually implies unforeseen costs in other dimensions.

For example, in "Balancing Precision and Retention in Experimental Design" (**R&R** at the *American Political Science Review*), we identify the circumstances under which implementing alternatives to the standard experimental design, such as pre-post outcome measurement or block randomization, may attenuate the expected gains in precision via explicit or implicit sample loss.

As another example, In a solo-authored piece published at the *Journal of Experimental Political Science*, I discuss the additional costs associated with planning and implementing double list experiments. This is a variant of the list experiment that promises narrower confidence intervals but comes with under-explored questionnaire design complications in the form of carryover design effects, a special kind of question order effect. I introduce parametric and nonparametric statistical tests to diagnose this effect, which in turn facilitate the implementation of double list experiments.

One of the core lessons from my research program on statistical precision is that combining different techniques may help offset their limitations. For example, in collaborative work in progress, we combine list experiments with questions from the network scale up method, a popular technique in the health sciences, to improve the precision of prevalence rate estimates for sensitive attitudes and behaviors. On the one hand, list experiments suffer from low statistical precision. On the other hand, generalizing to a population of interest through the network scale up requires assumptions that are untenable in social science applications. By using network scale up questions as auxiliary information to the list experiment, we improve precision without introducing cumbersome assumptions.

[CONTINUE HERE CONNECT WITH BJPS PAPER AND HOW I USE MY METHODS IN COOL APPLIED STUFF TOO]

My teaching focuses on making quantitative methods accessible to diverse audiences through a combination of flexibility and accountability. I have experience teaching courses on quantitative methods and world politics. At McMaster, I teach data analysis for public policy and public opinion. At Tulane, I taught a seminar on evidence-based policy to address social and political challenges in developing democracies. Both courses emphasize experimental and quasi-experimental designs, and I plan to expand them to include applications to machine learning and data science in the future. At Illinois, I served as a teaching assistant for statistics courses at the undergraduate and PhD levels using a flipped classroom approach. I also served as a math camp instructor for incoming graduate students for three consecutive years. I also have experience teaching introduction to comparative politics in a hybrid format and an online course on the politics of developing countries.

My involvement beyond the classroom also complements my teaching and mentoring. My work as the methods editorial assistant for the *American Political Science Review* gives me the opportunity to shape and influence the development and application of cutting-edge methods in the field. As a PhD student at Illinois, I started a collaborative project in which graduate students introduced their peers to new methods and organized a reading group on computational social science.

I am prepared to teach introductory courses in a research design quantitative methods sequence, as well as electives in causal inference, experiments, survey design, machine learning, data visualization, and their application to evidence-informed policy in the Global South and beyond. You can find copies of current and sample syllabi in my website.

I believe my expertise makes me an excellent fit at Cornell. If you have any questions, you can contact me via email or phone.

Sincerely,

Gustavo Diaz
Assistant Professor of Instruction
Department of Political Science
Northwestern University