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Dear Members of the Search Committee,

I write to express my interest in your call for an Assistant Professor in Methods. I am a postdoctoral fellow in Advanced Statistical, Causal Inference, and Computational Methodologies in the Department of Political Science at McMaster University. I received my PhD from the Department of Political Science at the University of Illinois at Urbana-Champaign under the supervision of Jake Bowers, Matt Winters, Gisela Sin, and Avital Livny.

My research uses tools from computational social science and design-based causal inference to develop standards to navigate research design tradeoffs in the social sciences. I apply these to topics ranging from the challenges to accountability, governance, and representation in developing countries, to questions of racial prejudice in the United States. My work is published or forthcoming in *World Development*, the *Journal of Experimental Political Science*, and *The SAGE Handbook of Research Methods in Political Science and International Relations*.

My primary 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, assuming that one can simply increase sample size to improve statistical precision. This is not feasible in most political science applications.

Focusing on field and survey experiments, this agenda follows two strands. First, I examine cases where one can improve statistical precision without sacrificing unbiasedness, which implies unforeseen costs in other dimensions. For example, in work under review with Erin Rossiter (Notre Dame), we show how implementing alternative variants 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. In a solo-authored piece accepted at the **Journal of Experimental Political Science**, I introduce new tools to assess the validity of estimates in double list experiments. This is a variant of the list experiment that promises more precise results but comes with under-explored questionnaire design complications. In work in progress with Inés Fynn (PUC-Chile), Verónica Pérez (Universidad de la República), and Lucía Tiscornia (University College Dublin), we show how to combine list experiments with network scale up questions to improve the precision of prevalence rates for sensitive attitudes and behaviors at the cost of one additional assumption.

The second strand focuses on cases where one can improve precision by sacrificing unbiasedness deliberately. For example, in work in progress with Jake Bowers (Illinois) and Christopher Grady (USAID), we discuss the circumstances under which researchers should prefer biased yet precise estimators to analyze experimental data, including applications to block-randomization and M-estimation. In a *SAGE Handbook* chapter with Christopher Grady and Jim Kuklinski (Illinois), we discuss the merits and challenges of increasingly complex survey experimental designs that improve precision at the cost of external validity bias.

My experience as a methodology and area studies postdoc at two separate institutions has given me the opportunity to teach courses in comparative politics and quantitative methods. At McMaster, I teach data analysis for public policy and public opinion. At Tulane, I taught introduction to comparative politics and a seminar on evidence-informed public policy to address social and political challenges in developing democracies. My work as the methods editorial assistant for the *American Political Science Review* also exposes me to the most current methods in the field, awareness of which I can incorporate into my teaching and mentoring.

In my time at Illinois, I served as a teaching assistant for statistics courses at the undergraduate and PhD levels using a flipped classroom approach. I served as a math camp instructor for incoming graduate students for three consecutive years and started a collaborative project in which graduate students introduced their peers to new methods. I also taught an online course on the politics of developing countries. These experiences have prepared me to teach to a diverse student body, to adapt to both online and in-person platforms, and to teach both the theory and application of research methods.

I am prepared to teach courses on computational social science, machine learning, data analysis and visualization, evidence informed public policy, and causal inference. You can find copies of current and sample syllabi in my website. As a first-generation scholar, my teaching philosophy emphasizes building skills for students with different backgrounds and career goals.

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

Sincerely,

Gustavo Diaz
Postdoctoral Fellow
Department of Political Science
McMaster University