

# Research Statement

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June 2025

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## Overview of My Research Contributions

Political methodology aims to improve statistical analysis in political science through developing and applying statistical methods that are tailored to the unique characteristics of political research. My research covers two specific areas in this field: (1) developing Bayesian statistical models for measuring latent constructs and (2) improving statistical analysis of survey experiment.

Almost all political research relies on concepts that are only indirectly observable. Political ideology, for example, is a latent construct that is not directly measurable, but is inferred from observable behavior such as voting patterns or survey responses. To effectively utilize newly available data sources, such as text, image, and video data, one needs to summarize information contained in these data into low-dimensional representations. As new concepts and data get researchers' attention, new methods for measuring concepts from data are needed.

My research on Bayesian statistical models contributes to the political methodology literature on this issue. Bayesian models are particularly suitable for this task, because they allow for flexible modeling with a large number of parameters and combining different sources of information. However, researchers often face the questions of what the desired model structure is and how exactly multiple sources of information should be combined. Two of my papers, Shiraito et al. (2023) and Xiang and Shiraito (2025), address the issue of model specification in measuring ideology of politicians and voters and voting blocks within parties, respectively. In these papers, I develop methods to discover groups of individuals with similar latent structures and to estimate the latent constructs of individuals from their observed behavior, instead of assuming that a common understanding of latent constructs applies to everyone as in existing methods. On the other hand, in Bosley et al. (2025) and Kim et al. (2025), I propose methods for combining information from text and another source, human labeling and citations between documents, respectively. These papers enrich statistical text analysis in political science by providing new methods to use these other inputs in addition to text. Also, in Goehring et al. (2025), I develop a hierarchical version of an existing measurement model so that region-specific salience of policies can be estimated.

Survey experiment, experiment in which survey respondents are randomly assigned to manipulated survey questions, is now the standard tool for public opinion research. Political methodologists have made significant contributions to the design and analysis of survey experiments by inventing new designs and methods that are suited to political science applications. Due to the wide variety of applications, however, how to address methodological issues that are known in other applications is not always obvious.

The second area of my research is to fill this gap. In Liu and Shiraito (2023), I draw the field's attention to one of such issues in an extremely popular design in political science, conjoint analysis. Conjoint analysis allows researchers to estimate the effects of multiple factors, but statistically testing on multiple estimates is prone to false discoveries due to the randomness of data. I show potential pitfalls of standard practices and proposed how practitioners can avoid this problem. I advance the understanding of conjoint analysis in McClean and Shiraito (2025), which examine how survey respondents answer conjoint questions about electoral candidates differently from their actual voting behavior and what exactly researchers can learn from the answers.

In addition to methodological research, I work on substantive research topics on citizens' political attitudes using survey experiments, specifically in three different contexts: toward international institutions in democratic societies, toward political leaders under authoritarian regimes, and toward gender and immigration issues in Japan.

Scholars in international relations have shown that informing people of their government's violation of international law or of an international organization's support for a policy can change their attitudes toward the government or the policy, but the aspect of the information that matters has yet to be disentangled. Kuzushima et al. (2024) contribute to this literature by showing that the public is moved because they prefer their government to abide by international legal obligations. Additionally, in Kuzushima et al. (2025), I show that an international organization can affect public opinion only when it is perceived as aligned with their country's interests. Our key contributions here are achieved by designing survey questions specifically for sorting out the effects of different aspects of information.

My contribution to the literature on authoritarian politics also relies on survey experiments. In authoritarian countries, citizens generally avoid expressing their political opinions in surveys, which makes it difficult to measure their political attitudes. Higashijima and Shiraito (2025) use two types of survey experiment, list and endorsement experiment, to measure citizens' support for the *de jure* and *de fact* dictators in Kazakhstan. By doing so, the paper is able to show that citizens are more favorable to the *de jure* dictator than the *de fact* dictator, which is contrary to the conventional wisdom. In examining the effect of introducing multi-candidate elections at a local level, Higashijima et al. (2025) use double list experiment to elicit truthful answers to a question about bribing experience. The paper shows that the quality of local governance deteriorated by the local elections, again contrary to what the literature would expect.

My research also examine multiple underexplored aspects of public attitudes toward gender and immigration issues in Japan. Japan has the lowest ratio of female politicians and the lowest ratio of immigrants in the population among industrialized democracies, but how its citizens perceive this situation is not fully understood. Liu et al. (2023) show that conservatism measured by preferences on policies unrelated to gender issues, rather than sexism measured by prejudice against women, drives opposition against women being its constitutional monarch. Sonntag et al. (2024b) find that Japanese voters evaluate female and male candidates similarly on immigration policy positions. Finally, during the COVID-19 pandemic, I discovered that Japanese citizens uniformly opposed almost any entry of foreign nationals into the country (Sonntag et al., 2024a).

## Bayesian Models for Measuring Latent Constructs

In the literature on locating political actors in a continuous scale of political ideology, i.e., ideal point estimation, item response theory (IRT) models are workhorse models. However, differential item functioning, where different groups interpret or respond to items differently, can complicate comparisons. For example, when legislators propose a policy, voters without extensive political knowledge may see the same policy differently, in which case their preferences cannot be directly compared. An important challenge is to specify subsets of actors who share similar mappings from latent space to observed policy proposals. Shiraito et al. (2023) contributes to this literature by using a nonparametric Bayesian model to address unobserved heterogeneity in item response functions. It proposes the Multiple Policy Space (MPS) model, whose key innovation is to use a Dirichlet process mixture of item response functions so that the model discovers groups of individuals who share common item parameter values. Therefore, unlike conventional IRT models, the MPS model does not make the assumption of measurement invariance that individuals respond to policy proposals with an identical policy space in their mind. Moreover, the MPS model does not require the number of groups to be specified in advance. Applied to data on U.S. legislators

and voters, this approach reveals that a substantial portion of voters may not share the same item parameters as legislators, impacting joint scaling analyses.

Another approach to estimating preferences of political actors is to find distinct groups of actors who share similar voting patterns. Even within a single party, legislators may have different policy preferences on certain issues that lead them to form coalitions with members of other parties who are not necessarily close on the ideological scale. When these coalitions change over time, it is important to understand when and how these changes occur. However, since coalitions that do not match party lines are often unrecorded and unstable, how many coalitions exist and how many times they change are hard to specify. Xiang and Shiraito (2025) address this problem by developing a dynamic nonparametric Bayesian model for analyzing the evolution of legislative coalitions over time. We specifically extend the Dirichlet process mixture model to a dynamic setting, allowing individuals in the data to move across latent groups over time. Our core technical innovation is to embed a Dirichlet process into a Markov process of group memberships and develop a forward-backward algorithm for posterior inference using Markov chain Monte Carlo (MCMC). In our proposed model, unspecified number of groups may emerge and diminish as a continuing process, rather than a structural change that affects all individuals. We apply the model to data on legislative behavior of the U.S. House Representatives from the 1930s to the 1960s on civil rights issues and show that the method allows us to discover changing patterns in inter- and intra-party coalitions during this period.

The use of text data has become popular in political science over the past fifteen years. Since raw text is too noisy to be used directly, political scientists need to extract meaningful information by some form of dimension reduction. A common approach in political science is to classify documents into predefined categories and use the category labels as outcomes or predictors. Unfortunately, large-scale labeled document data sets are rare in social sciences, and it is costly to obtain document labels that are tailored for a specific research question of each study. In Bosley et al. (2025), my coauthors and I propose a method to combine active learning and a mixture model to achieve more accurate performance under the constraint of limited human-labeled documents. Active learning is a machine learning technique in which human coders are asked to label a small number of documents that the algorithm is most uncertain about, rather than labeling randomly sampled documents in the data set. By using a simple mixture model as a workhorse for text classification, we can effectively combine human labels from active learning steps with unlabeled documents to improve the classification performance. The paper demonstrates that the method replicates prior substantive findings based on text classification with approximately one third of the number of manually labeled documents compared to original studies.

Topic modeling, a method for discovering latent topics in a corpus of documents, is another common approach to dimension reduction in text data. Incorporating other information than text, such as metadata of documents, into topic models has been developed in political methodology. Contributing to this literature, I co-developed a unified topic model that integrates document text and citations in Kim et al. (2025) with my former graduate students. Text datasets commonly used in political science (e.g., court decisions) often include a citation network, where documents in the dataset cite each other. Conventional methods for analyzing citation networks, however, did not allow for estimating distinct topics for multiple citations made in the same document, obscuring the topical diversity of citations. My research introduces the paragraph-citation topic model (PCTM), which systematically integrates citation network data with document text by assigning topics at the paragraph level. This novel Bayesian topic model thereby allows citations made in different paragraphs of the same document to be associated with distinct topics. The PCTM also models paragraph-level citation propensities through a regression framework, enabling researchers to explore strategic citation dynamics. Applied to the majority opinions of the Supreme

Court of the United States (SCOTUS), the PCTM demonstrates its ability to find topic diversity across citations, which standard document-level topic models miss.

## **Conjoint Analysis and Multiple Hypothesis Testing**

Since causal inference using conjoint analysis was first formulated, its use has rapidly grown in the field. The design allows researchers to estimate the effects of a large number of factors on multidimensional decision making by having respondents choose a preferred profile consisting of the features. However, this substantive virtue leads to a statistical vice, because the users have to statistically test a large number of hypotheses. Although the multiple hypothesis testing problem, where the probability of having false positive results increases with the number of hypotheses tested, is well known, little attention has been paid to this issue in applied research using conjoint analysis. Liu and Shiraito (2023) assess the severity of the problem in typical conjoint designs and discuss how researchers can ameliorate the issue. We show that even when none of the factors has any effects, the standard analysis pipeline produces at least one statistically significant estimate in more than 80% of experimental trials. More importantly, we compare three off-the-shelf easy-to-use methods for multiple testing correction in simulation studies and show how conclusions drawn from empirical analysis may differ with and without correction by reanalyzing existing applications. By doing so, we provide applied users of the design with a guidance on how to choose a correction method in their analysis.

## **Public Attitudes toward International Institutions**

Studies using survey experiments have flourished recently in international relations (IR). An important topic in this literature is public attitudes toward international institutions, such as international organizations (IOs) and international law. A longstanding question in IR is whether international institutions may influence state policies, and survey experiments have facilitated research on how citizens' attitudes toward their government's policies are affected by international institutions. Yet, although citizens, particularly in democracies, are shown to change their attitudes toward their government's policies in response to information about the compatibility of the policies with international institutions, empirical evidence is still limited on why this is the case.

In Kuzushima et al. (2024) and Kuzushima et al. (2025), my coauthors and I provide new evidence for this question. What distinguishes these two papers from existing studies is that we focus on potential mechanisms when designing our survey experiments. In the first paper, we design information treatments to disentangle two different motivations of the public for the preference to international law compliance: respect for legal obligations and the desire to follow globally common practices. As a result, we find that legal nature of international laws, rather than the desire to adopt common practices, is crucial to domestic preference for international compliance. In the second paper, we manipulate the identity of IOs that endorse a policy proposal and measure the perceived traits of the IOs, such as impartiality and expertise, to examine how these traits affect the effectiveness of IO endorsements in shaping public attitudes toward a policy. We show that, contrary to the conventional wisdom in the literature, being impartial or possessing expertise does not give rise to the IO's effectiveness. Rather, the perceived alignment of the IO with national interests is the key to its ability to shape public opinion. These findings offer new insights into when and how IOs shape mass attitudes and, by extension, state policies.

## **Citizens under Authoritarian Regimes**

Countries with authoritarian governments are difficult sites to study political attitudes and behavior of citizens, since they avoid expressing true opinions for fear of government retaliation. Studies on electoral authoritarian regimes have argued that autocrats also lack reliable information on public

attitudes and therefore face challenges in their efforts to maintain public support. Demonstrating this claim empirically, however, is difficult. Higashijima and Shiraito (2025) provide new evidence by measuring public support for a tutelary power arrangement in Kazakhstan, where a long-serving autocrat transferred the presidential position to his successor while exercising substantial influence as a guardian. Using list and endorsement experiment to elicit truthful responses by indirectly asking sensitive questions, we find that the successor was more popular than the guardian. Our research is the first to compare citizens’ support for two dictators in one country. A year after our survey, the less popular one was ousted due to mass uprisings, which is a real-world attestation of our findings. In Higashijima et al. (2025), my coauthors and I continue to broaden the understanding of citizens’ political attitudes under authoritarian regimes by examining how the introduction of elections affects public perceptions of government. This paper exploits the staggered implementation of village elections in Kazakhstan to identify the causal effect of experiencing elections. We find that citizens who have participated in their first election do not feel more politically efficacious. However, they report more frequent experiences of bribing local officials, which we ask in a double list experiment. Our work suggests that, contrary to the expectations of existing studies and even autocrats themselves, introducing elections may not change the public’s view on the government positively and that elections in early stages of potential democratization may not be a panacea for empowering citizens and improving governance, more broadly.

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