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Demonstrating the Impact of Prior Knowledge in Risky Choice

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Abstract

Bayesian models that optimally integrate prior probabilities with observations have successfully explained many aspects of human cognition. Research on decision-making under risk, however, is usually done through laboratory tasks that attempt to remove the effect of prior knowledge on choice. To test the effects of manipulating prior probabilities on participants' choices, we ran a large online experiment in which risky options paid out according to the distribution of Democratic and Republican voters in unknown congressional districts in known US states. This setup allows us to directly manipulate prior probabilities while holding observations constant and to compare people's choices with the options' true posterior values. We find that people's choices are appropriately influenced by prior probabilities, and discuss how the study of risky choice can be integrated into the Bayesian approach to studying cognition.