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Authors

Connor Desai, Saoirse

Kemp, Charles

Hayes, Brett

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Censor Detection: Detecting and adjusting for sample bias

Saoirse Connor Desai

University of Sydney, Sydney, NSW, Australia

Charles Kemp

University of Melbourne, Melbourne, VIC, Australia

Brett Hayes

University of New South Wales, Sydney, Australia

Abstract

When and how do people detect and adjust for sample bias? The present work examines how people use a small, potentially biased sample to reason about the population from which the sample was drawn. We developed a task to explore when and how people generalize from selectively sampled evidence and which cues learners use to infer the presence of selection bias and adjust their responses accordingly. Participants sampled data that followed several different distributions (e.g., bimodal) and constructed their own frequency distribution of a larger “population”. Participants “filled in” missing data when sample distribution observations were sparse or were inconsistent with priors about distribution shape. Human responses were compared with several computational model predictions. An averaging model captured response curves better than a normative Bayesian approach (for some distributions). Results suggest that people draw on both prior distributional expectations and observed sample distributions when generalizing from potentially biased samples.