

Revisiting the Berkeley Admissions data: Statistical Tests for Causal Hypotheses

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Reasoning about fairness through correlation-based notions is rife with pitfalls. The 1973 University of California, Berkeley graduate school admissions case from Bickel et al. (1975) is a classic example of one such pitfall, namely Simpson's paradox. In this talk we reason about the Berkeley graduate school admissions case through a causal lens. We compare different causal notions of fairness that are based on graphical, counterfactual and interventional queries on the causal model, and develop statistical tests for these notions that use only observational data. We study the logical relations between notions, and show that while notions may not be equivalent, their corresponding statistical tests coincide for the case at hand. In particular, we introduce a statistical test for causal hypothesis testing based on Pearl's instrumental-variable inequalities (Pearl, 1995) and discuss the implications on concluding about fairness through the resulting statistical test.