

The Winner's Curse in Data-Driven Decision-Making: Evidence and Solutions

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Abstract

In this paper, we first provide a theoretical demonstration that selecting the optimal decision based on estimated effects from data leads to systemic overly-optimistic evaluations of that decision's value — a phenomenon known as the winner's curse — even when the estimators are unbiased and regardless of the optimization procedure used. We then empirically show that an economically significant winner's curse exists across a broad set of marketing applications with realistic parameter settings, including A/B testing, personalized targeting, and assortment optimization, and propose a correction method based on a non-continuous bootstrap.

Track: Methods, Modelling & Marketing Analytics