

# Estimating causal effects with double/debiased machine learning - a method evaluation

**Jonathan Fuhr**  
University of Tübingen  
**Dominik Papies**  
University of Tübingen  
**Philipp Berens**  
University of Tübingen

Cite as:

Fuhr Jonathan, Papies Dominik, Berens Philipp (2023), Estimating causal effects with double/debiased machine learning - a method evaluation. *Proceedings of the European Marketing Academy*, 52nd, (114227)

Paper from the 52nd Annual EMAC Conference, Odense/Denmark, May 23-26, 2023



# Estimating causal effects with double/debiased machine learning - a method evaluation

## **Abstract**

The estimation of causal effects with observational data continues to be a very active research area. In recent years, researchers have developed new frameworks which use machine learning to relax classical assumptions necessary for the estimation of causal effects. In this paper, we review one of the most prominent methods - "double/debiased machine learning" (DML) - and assess its applicability to typical research questions in marketing and other social science by comparing its performance on simulated data relative to more traditional statistical methods and apply it to real-world data. The results show that in a cross-sectional setting, DML adjusts more flexibly for observed confounding than traditional methods and thus allows us to relax assumptions that are necessary for other methods. However, the method continues to rely on standard assumptions for nonparametric causal identification. We mention further extensions and give recommendations for applied researchers.

**Subject Areas:** *Decision-Making, Market Analysis and Response, Pricing*

**Track:** Methods, Modelling & Marketing Analytics