

## Seminario Aleatorio

*Sesión 390*

# Propensity score augmentation in matching-based estimation of causal effects

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Resumen

When assessing the causal effect of a binary exposure using observational data, confounder imbalance across exposure arms must be addressed. Matching methods, including propensity score-based matching, can be used to deconfound the causal relationship of interest. They have been particularly popular in practice, at least in part due to their simplicity and interpretability. However, these methods can suffer from low statistical efficiency compared to many competing methods. In this work, we propose a novel matching-based estimator of the average treatment effect based on a suitably-augmented propensity score model. Our procedure can be shown to have greater statistical efficiency than traditional matching estimators whenever prognostic variables are available, and in some cases, can nearly reach the nonparametric efficiency bound. In addition to a theoretical study, we provide numerical results to illustrate our findings. Finally, we use our novel procedure to estimate the effect of circumcision on risk of HIV-1 infection using vaccine efficacy trial data.

**Viernes 26 de agosto de 2022,  
11:00 horas de CDMX,  
Salón 102, ITAM, Campus Río Hondo**

<https://itam.zoom.us/j/96139663776?pwd=UzFqNUxIOEJ6V0VWSmovNUNhdU0xdz09>

ID de reunión: 961 3966 3776

Código de acceso: 882697

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