



**THE UNIVERSITY OF GEORGIA
DEPARTMENT OF STATISTICS**

Colloquium Series

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Zoom link: <https://zoom.us/j/7389376577>

**Propensity score estimation using density
ratio model**

Missing data is frequently encountered in practice. Traditional propensity score approach is a popular tool for handling such missingness. The propensity score is often developed using the model for the response probability which can be subject to model misspecification errors. In this paper, we consider an alternative approach of estimating the inverse of the propensity scores using density ratio function. By partitioning the sample into two groups based on the response status of the elements, we can apply the density ratio function estimation method and obtain the inverse propensity scores. Density ratio estimation can be obtained by applying the so-called maximum entropy method which uses the Kullback-Leibler distance measure. By including the covariates for the outcome regression models only into the density ratio model, we can achieve efficient propensity score estimation. We further extend the proposed approach to the multivariate missing case. Some limited simulation studies are presented to compare with the existing methods.

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