

# PLEBISCITE FOR PEACE IN COLOMBIA: STATISTICAL ANALYSIS USING COMPOSITIONAL DATA

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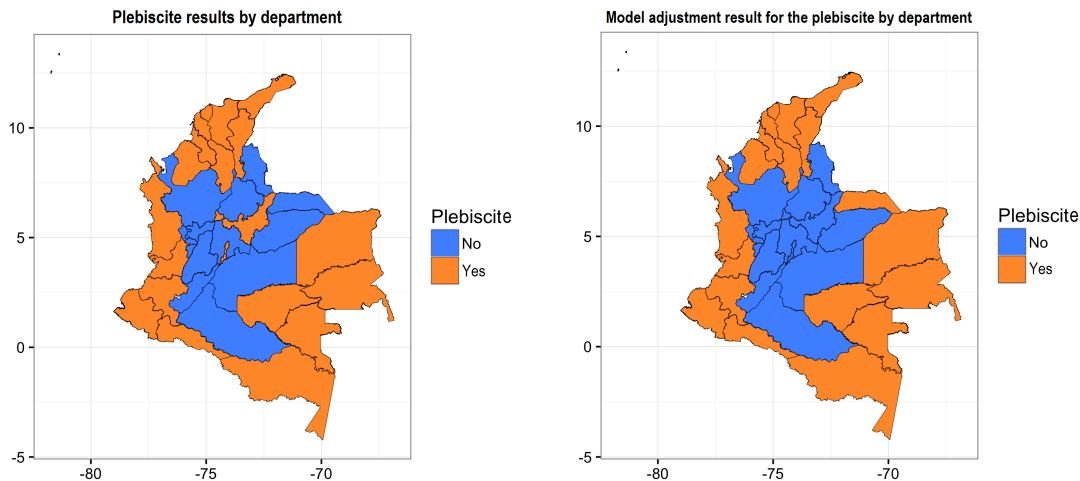
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## Abstract

Recent electoral processes such as England “brexit”, the presidential elections in the United States and the plebiscite for peace in Colombia, have shown the failures that polling firms have with voting intention studies, this fact motivates the use of other tools such as compositional data in order to analyze this type of information.

This paper presents an application of tools designed for CoDa using data from the plebiscite for peace in Colombia; the fit of a model, a cluster and a discriminant analysis are present in order to predict and model the results obtained in the plebiscite.

The results shows both cluster and discriminant analyzes have above 80 % success rate predicting the winning option (YES, NO) in the municipalities and departments of Colombia, in the other hand, the fitted model shows how information from previous electoral processes should be use to improve forecasts. Figure 1 shows how the results of the model for the municipalities and departments in Colombia (right panel) are very close to those observed on the day of the plebiscite (left panel).



(a) Departmental map with the original results (b) Departmental map with the model results

Figure 1: Geographical comparison by department: Real results vs adjustment of the model

## References

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- van den Boogart, K & Tolosana-Delgado, R. (2013). *Analyzing Compositional Data with R* Springer.