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Title: Regression for Compositional Data by Using Distributions Defined on the Hypersphere

Abstract: Compositional data can be transformed to directional data by the square root transformation and then modelled using distributions defined on the hypersphere. One advantage of this approach is that zero components are catered for naturally in the models. The Kent distribution for directional data is a good candidate model because it has a sufficiently general covariance structure. We propose a new regression model which models the mean direction of the Kent distribution as a function of a vector of covariates. Our estimators can be regarded as asymptotic maximum likelihood estimators. We show that these estimators perform well and are suitable for typical compositional datasets, including those with some zero components.

Speaker Info: In 2003 I completed a Bachelor of Mathematics honours degree majoring in Statistics at the University of Wollongong. >From 2004-2010 I worked at the Australian Bureau of Statistics and while there I did research on small area estimation and statistical disclosure control methods. Last year I completed my PhD in Statistics at the ANU (Australian National University). I am currently employed as a Postdoctoral Fellow at the ANU. My current research interests are in the areas of mixed model selection and compositional data analysis, including mixed models for compositional data.