HERITABILITY AND COVARIATE EFFECTS IN A BRAZILIAN FAMILIES STUDY

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One of the difficulties encountered in the genetic analysis of complex human diseases is due to the heterogeneity resulted from the interaction of environmental and genetic factors. One of the causes of this heterogeneity is the large variability and family aggregation found in the measures of blood pressure, total cholesterol and fasting blood glucose. The variance components model has been widely used to model the environmental and genetic effects shared by blood related individuals. Its flexibility has been useful to accommodate covariates that contain environmental information, and also to model the genetic effect as a random component, enabling different types of inheritance between the families. The estimates of heritability (intra-class correlation coefficient) are of interest in this type of analysis and it can be influenced by the covariates. The objective of this work is to investigate, using the classical variance components model, the effect of adding and removing covariates on the estimates of heritability of variables associated to cardiovascular risk factors. To accomplish this, we use the decomposition of the added variable plot (Hilden-Minton, 1995). As an application, we analyze the data from 81 Brazilian families, involving 1,666 subjects from the village of Baependi in the state of Minas Gerais, Brazil.

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