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Editorial

ICFES as the leader of cognitive measurement processes

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Committed to spreading the results of its research, el Instituto Colombiano para la Evaluación de la Educación (the Colombian Institute for the Assessment of Education, hereafter ICFES) wants to share with the readers of *Comunicaciones en Estadística* a collection of research works that intend to show some methodological proposals that have been used in diverse stages of the process of evaluating education in Colombia. Convinced that our role must be leading the research in evaluation processes, we have accepted this request of the Faculty of Statistics at Universidad Santo Tomas in order to show some products resulting from our research lines in evaluation, which include numerous statistical, psychometrical, econometrical, and social methodologies.

ICFES is a respected entity worldwide not only for successfully facing the logistic challenges that imply evaluating more than three million individuals every year in Colombia, but also for having a qualified technical team prepared for proposing strong and precise methodologies that are consistent with the scientific findings which lead the purpose of cognitive (and non-cognitive) performance evaluation around the world. The goal of making Colombia the most educated country in Latin America by 2015 is a challenge that we have assumed with the maximum technical commitment and the highest quality standards. This is a little representation of the hard work we perform daily in order for the results reported to all participants involved in the sector of education (such as students, schools, higher education institutions, certified territorial entities, among others) to have the most credibility and precision, so that the public policy decision-making be accurate and benefit all the Colombian Society.

Regarding the articles of this number, the first one is presented by Gutiérrez, Lemus and Acero who discuss some challenges to face when applying Bayesian approach in the item response theory models. In addition, they show the advantages that such methodologies may bring compared to the classic models for estimating parameters of skill and difficulty needed for scoring State tests.

The second article is presented by authors Cruz, Ortiz, and Lemus, who construct a socio-economical family index for students who take the Saber 11 test; results show

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an analysis of performance in the tests given the socio-economical index. The third article, in accordance with the former, presents a proposal for the construction of a socio-economical index for students who take the Saber Pro test; authors Cuellar, Guerrero, and Lopez analyze variables to be included and show a breakdown of results obtained regarding the results of the test. Both proposals focus on the differences among populations under analysis and on its validity face to the selected variables. For the first case, a socio-economical family index which population of interest is made up by students about to graduate from high school; for the second, an individual socio-economical index is built in which the population of interest is students who are about to finish their undergraduate, technical or technological studies.

In the fourth article, authors Acero, Sánchez, Suárez, and Téllez present the use of generalized linear models and classical test theory to find equivalencies of results obtained in the Saber 11 tests taken before the second application in 2014, as the test was reformulated in early 2012. Results show that there exist advantages in the use of beta regression models due to the reduction of the estimation error.

In the fifth article, Córdoba presents an argumentation on the use of plausible values for data imputation, which is required when there is a large reference framework and it is not possible for each individual to cover all of the possible items; it is via simulation how the author presents the benefits such method brings to the particular context of standardized tests.

For the sixth article, authors Gutiérrez, Zhang, and Montaño introduce the necessary developments for estimating the sample size required when the objective is the approximation of the score variance in standardized tests, having as a goal to punctually estimate such a parameter or to compare a hypothesis system. Their results are based on the theory of sampling and their practical application is immediate, taking into account that most of the tests applied by the ICFES require the selection of a representative sample from the population of interest in order to strengthen the processes of item calibration.

Last but not least, Duarte, Godoy and Dueñas compare cohorts of tests Saber 3, 5, and 9 in order to evaluate the added value or the absolute profit of a school student. Authors discovered that there exist schools that, despite having low general academic performance, have registered students who demonstrate and maintain high performances but fail in pacing students with low performance. Such encouraging results might result in better decision-making by the educative institutions.

We hope this issue of the journal pleases you and send you our best regards, not before reminding you to send your suggestions and comments.