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A comparative study of fit adequacy of logit models under the dichotomous response variable

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Goodness-of-fit measures in logistic regression could be approached as a base rate invariant goodness-of-fit measure or as a criterion that the Pseudo-R^2 be as close as possible to what OLS-R^2 would be on the underlying latent variable model. It is this second approach that this paper is used in assessing the best fit for anthropometric factors (crown heel length, foot length, head and chest circumferences) of 1,413 babies born in Imo State, Nigeria in 2008. Result of goodness-of-fit measured, were 0.1913, 0.1693, 0.1891, 0.2663, 0.1733, 0.1327, 0.3718 and 0.8057 for R_o^2, R_{MF}^2, R_M^2, R_N^2, R_C^2, τp, λp and $\varnothing_p$ respectively. The best goodness-of-fit measure of the logit model was obtained by comparing each of the measures with a known data. Data obtained from a regression using the OLS technique were dichotomized. This was followed with a logit analysis on the data and a calculation of the various goodness-of-fit measures. The closest value to R^2 of the OLS case was accepted to be the best. The results of the pseudo R^2 values were generally the same except for R_N^2 which was highest and closest to the R^2 value of the OLS regression model. Since for a cross-sectional data, such as this, an R^2 value of about 0.23 is adjudged adequate, the R_N^2 of 0.2663 was concluded to be the best measure of goodness-of-fit among the pseudo R^2 statistics.

Biography

Joy Chioma Nwabueze is an Associate Professor of Statistics with specialization in Econometrics. She has over 40 publications to her credit in reputable journals. She has participated steadily on National Bureau of Statistics Workshops in Nigeria and other national and international Conferences. She has examined, supervised and graduated over 20 postgraduate students. She is a Ph.D. holder, which she obtained 13 years ago from the University of Ibadan, Nigeria. She is a member of the Nigeria Statistical Association (NSA). She has many distinguished Honors and academic Awards. She obtained the Nigerian Tertiary Education Trust Fund (tetfund) sponsorship for this Conference.

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Page 85