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Longitudinal zero-inflated count data with random effects to model Instrumental Activities of Daily Living (IADL-s)

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Abstract

The instrumental activities of daily living (IADL-s) are important index of physical functioning in older adult studies. Measuring IADL-s longitudinally can provide useful information for assessing functional independence among older adults, which can capture the dynamic changes of responses over time. These count outcomes with a large proportion of zeros are often collected in longitudinal studies. The study is motivated by the data from the Hispanic Established Population for Epidemiological Study of the Elderly (HEPESE), a four wave (seven years) longitudinal study of community-dwelling elderly Mexican-Americans. The outcome measure is number of difficulties with ten items of daily activities. There are excess zeros IADL-s observed during seven year follow-up. We present Zero-inflated Poisson (ZIP) and hurdle model with nonlinear time effects to evaluate IADL-s in the context of excess zeros. We conduct a goodness-of-fit test for the Zero-inflated Poisson (ZIP) and hurdle model with excess zeros in longitudinal studies.

Biography

Ping Yao has completed his Ph.D. in statistics from University of Missouri, Columbia, MO in 2009 and now he is an assistant professor in Northern Illinois University, DeKalb, IL. He has published several papers in peer reviewed journals. His research interests focus on application of statistics to medical and health studies.