

# Weighted generalized quasi-likelihood estimation in a survey population setup for longitudinal count data

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**Abstract.** The effects of ignoring the sample selection process when fitting models to survey data can have severe effects on the inference process. As a remedy, many sample survey studies in the independent setup use the sampling design weights based estimating equations while fitting the generalized linear models (GLMs) for normal, binary or count observations. A generalization to the panel data or longitudinal setup is also studied where repeated observations are collected from the individual selected based on a sampling design, but they are confined to the linear correlated model setup for continuous observations. In this talk, we consider a GLLMM (generalized linear longitudinal mixed model) for repeated count data in a finite population setup and develop sampling design weights based generalized quasi-likelihood estimating equations for the estimation of the survey population parameters. As one of the primary interests, we then provide the formulas for the asymptotic variances of such WGQL (weighted generalized quasi-likelihood) estimators and their unbiased estimates. The results of this work should be useful to practitioners including the survey statisticians and statistical agencies such as government Statistical Bureaus.

## References

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