Irka Oktafia Dewi, 2007. **Confidence interval of semiparametric likelihood ratio for mixture proportion.** This script was written under the tutor Drs. H. Sediono, M.Si and Drs. Suliyanto, M.Si. Mathematics Departement, Faculty of Mathematic and Natural Sciences, Airlangga University.

ABSTRACT

Semiparametric model is to be a combination model between parametric and non parametric models. The aim of this study is to construct confidence interval of semiparametric likelihood ratio for mixture proportion. In the discussion we used the MSELR (Maximum Semi Empirical Likelihood Ratio) method, i.e., a combination method between Maximum Likelihood Ratio Test (MLRT) and Maximum Empirical Likelihood Ratio (MELR) methods.

By using the MSELR method, the pivotal quantity for mixture proportion of semiparametric model can be investigated. So, by considering the pivotal quantity distribution, the confidence interval of semiparametric likelihood ratio for mixture proportion, can be easilly obtained.

The result showed that the distribution of pivotal quantity converged to Chi Square distribution of 1 degree freedom. The confidence interval of semiparametric likelihood ratio for mixture proportion was:

$$P\left(\tilde{\lambda}-\sqrt{\frac{\chi^2_{(1,1-\alpha/2)}}{n\left(-(s_{11}-c_{12}c_{22}^{-1}c_{21})\right)}}<\lambda_T<\tilde{\lambda}-\sqrt{\frac{\chi^2_{(1,\alpha/2)}}{n\left(-(s_{11}-c_{12}c_{22}^{-1}c_{21})\right)}}\right)=(1-\alpha)100\%$$

with $c_{12}=c_{21}^{\tau}=(s_{12},s_{13})$, $c_{22}^{-1}=\begin{pmatrix}s_{22} & s_{23}\\ s_{32} & s_{33}\end{pmatrix}^{-1}$, and s_{11}, s_{12}, s_{13}, s_{22}, s_{23}, s_{32}, s_{33} are the second differentiable of *log-likelihood* for parameters λ, β, α. Based on data of 98 patients of 1-54 years who were infected by dengue viruses we obtained semi-parametric likelihood ratio confidence intervals for mixture proportion location between 0,358 and 0,5.

Keyword : Function of Likelihood, Ratio, Semi parametric Design, Confidence Interval.