

In this thesis we will describe the maximum likelihood method, method of estimating unknown parameters that determine the probability distribution of the observed data. We will also introduce other methods derived from the likelihood. We focus primarily on a quasi-likelihood and a pseudo-likelihood approach. Then we briefly describe profile likelihood, empirical likelihood, and conditional likelihood. The thesis includes a simulation study which compares the quality of the estimators based on the maximum likelihood and the quasi-likelihood or the maximum likelihood and the pseudo-likelihood using the mean squared error.