

THE ASYMPTOTIC COVARIANCE MATRIX FOR MAXIMUM
LIKELIHOOD ESTIMATORS WITH MODELS BASED ON
LOCATION-SCALE DISTRIBUTIONS INVOLVING CENSORING,
TRUNCATION, AND EXPLANATORY VARIABLES

by

Luis Escobar and William Q. Meeker
Iowa State University

Abstract

In this paper we show how to compute the Fisher information matrix and the asymptotic covariance matrix for maximum likelihood estimators for a wide class of parametric models that include combinations of censoring, truncation, and explanatory variables. Although the models are based on underlying location-scale distributions, applications extend, for example, directly to the closely related and widely used Weibull and lognormal distributions. We unify and generalize a number of previously published results. Our results are important for determining needed sample sizes and for otherwise planning statistical studies.