Using Survival for Degradation Data Analysis

M. Reyes, M. Rodriguez, and V. Reyes

Instituto Tecnológico de Cd. Juárez
Ciudad Juárez, Chihuahua, México

Corresponding author's Email: reyesmjesus@yahoo.com

Abstract: The Survival package is used for the reliability analyses of degradation data. The software package R provides an "Open Source" option for those interested in reliability and statistical analysis. The term "Open Source" is commonly applied to the source code of software that is made available to the general public with either relaxed or non-existent intellectual property restrictions.

The Weibull Distribution is often used in the analysis of lifetime data because of its ability to model a wide range of naturally occurring reliability data from lifetime to strength data. The reliability/survival function captures the probability that the system will survive beyond a specified time (or pressure) to failure. Kaplan-Meier plots are one of the most popular survival plots. The Kaplan-Meier estimator estimates the survival function from life-time data.

The requirements for high reliability have increased the need for further testing of materials, components and systems, the main objective of this article is the practical determination of the time to failure in high quality products, where a methodology for analyzing the proposed degradation data using the Cox regression model. The ultimate goal of this work is to have an accessible methodology for analyzing degradation data through simulation and incorporate probabilistic sampling information.

Keywords: Cox Regression Model, Degradation, Survival, Weibull Distribution, Parametric Survival Regression Model