

Survival Analysis for Vehicles in the U.S., 1990-2020 (preview)

Abstract:

Survival analysis is a branch of statistics used by engineers to estimate the reliability of some mechanical system before it ultimately fails. In particular, survival analysis is used to estimate the lifespan of consumer goods. Previous efforts have studied the estimated lifespan of civilian vehicles based on a set of common attributes. In this preliminary report, we focus on the American market over 1990-2020. For our study, the variables of interest are the manufacturer, body type, number of owners, mileage, and age of the vehicle.

Model:

$$f(x) = \begin{cases} \lambda e^{-\lambda x} & (x > 0) \\ 0 & (x \leq 0) \end{cases}$$

Exponential distribution and Weibull distribution measure the status of the occurrence of a specific event in a time interval. Exponential distribution and Weibull distribution have a probability density function respectively

References:

<https://www.diva-portal.org/smash/get/diva2:730004/FULLTEXT01.pdf>

https://file.scirp.org/pdf/JTTs_2019011513314309.pdf