ESTIMATING THE SURVIVAL TIME OF CANCER DRINKER PATIENTS USING STOCHASTIC MODEL

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Abstract

This article motivated by the women’s health. It has been widely recognized that the amount of people infected patients with advanced or metastatic ER, HER2 - negative cells are growths so damaged in others good cells breast cancer has been increasing in recent years especially in developing countries. The threshold level of HER2 - negative infected cells is been calculated through statistical model of the infected person. Many standard of medical care are based on the demonstrated effects of various treatment strategies or process.

Key words: ER, HER2 – negative, Infected Cell, growth cell, Infected person and Expected time.

1. Introduction

As an illustration we apply the design to data from an ongoing study of human breast cancer. It may happen that successive shocks become increasingly effective in causing damage, even though they are independent. One is interested in an item for which there is a significant individual variation in ability to withstand shocks. When the HER2 negative infected cells are affected in human body, shock with different infected variable is the one to look. When the immune system does not accumulated the increase in shock which is the inter-arrival time, the expected life time of the human system will reach the threshold. The total cumulative damage found with shock model approach using renewal process.

The expected life time is has been derived through modified weibull distribution. The original data in the model derived for the Expected time. The observed data are collected from the MGR medical college.

2. Model Descriptions

The Cumulative density function (CDF) of the modified Weibull Distribution \((x; \tau, \varphi, \omega)\)

\[ F(x; \beta, \sigma, \omega) = 1 - e^{-\beta x - \sigma x^\omega}, \quad x > 0 \]

\[ H(x) = 1 - F(x) = e^{-\left( \frac{\beta x - \sigma x}{\omega} \right)^\omega}, \quad \omega = 1 \]

\[ Y: \text{Continuous random variable denoting the} \]

\[ \text{threshold level of modified weibull distribution.} \]

\[ P(X_i < Y) = \int_0^\infty g_k(x) e^{-\left( \frac{\beta x - \sigma x}{\omega} \right)^\omega} dx = \left[ g^k(\beta + \sigma) \right]^k \]

\[ S(t): \text{The survivor function i.e. } P(T > t) \]

\[ p(T > t) = \sum_{k=0}^\infty p_k(t)p(X_i < Y) = \sum_{k=0}^\infty \beta F_{x+i}(\tau) - P_{x+i}(\tau)[g(\beta + \sigma)]^k \]
Let a continuous random variable \( U \) denoting inter arrival time between decision epochs which follows exponential distribution.

Now, substituting in the below equation (4) we get,

\[
L^*(s) = \frac{c[1-g^*(\beta+\sigma)]}{[c+\lambda-g^*(\beta+\sigma)c]}
\]

(1) \( \Rightarrow \)

\[
E(T) = \frac{d}{ds} \quad \text{L}^*(s) \quad \text{given} \ s = 0
\]

\( F_k(t) \), probability that there are exactly ‘k’ policies decisions in \( (0,t) \), \( g^*(\lambda) \sim \exp \left( \frac{\gamma}{\gamma+\beta+\sigma} \right) \)

Taking Laplace transform of \( L(t) = 1 - S(t) \), we get

\[
L(t) = [1-g^*(\beta+\sigma)]\sum_{k=1}^{\infty} F_k(t) [g^*(\beta+\sigma)]^{k-1}
\]

(3)

On simplifications we get,

\[
L^*(s) = L(t) = \frac{[1-g^*(\beta+\sigma)]f^*(s)}{[1-g^*(\beta+\sigma)f^*(s)]}
\]

(4)

\[
E(T) = \frac{\gamma+\beta+\sigma}{c(\beta+\sigma)}\quad \text{Where:}
\]

Drinking affect cancer patients ER, HER2-growthing cells in stage wise

\( \gamma \) - Stage I
\( \beta \) - Stage II
\( \sigma \) – Stage III

\( C \) – Time Interval

\( \gamma \) – Stage I
\( \beta \) – Stage II
\( \sigma \) – Stage III

<table>
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<tr>
<th>( C )</th>
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3. Conclusion

The person infected with women breast cancer ER, HER-2 cell infected is more quickly to cross the threshold level. Once the person is infected, the ER, HER-2 Cells growth gets damaged and he/she is likely to affect, when infected with human breast cells. The time interval is the drinking of the infected person. The expected life time decreases quickly to the threshold level. The model shows that once the person is infected the breakdown of the immune system starts which is observed in the above table and figures. We observe that once the person gets affected by the cancer, good cells growths in tumor and ER, HER-2 cells are damaged breast cancer his/her immune system capacity gets decreased. By Proper medical doctor advice and through regular treatment his/her life span can be extended.

4. References

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