Introduction

Abstract. In many industrial and medical applications, censored observations are collected. For example, when a patient is diagnosed with a disease, the treatment is initiated to increase the probability of survival past the diagnosis time. However, the patient may experience complications that require further treatment or additional procedures, leading to a censored observation. In this paper, we propose a method to estimate the survival function and the cumulative hazard function using censored data. The method is based on the concept of the survival function and the cumulative hazard function, which are defined as the probability of surviving past a certain time and the total amount of risk experienced up to a certain time, respectively.

1. Methods

We consider the survival function and the cumulative hazard function. The survival function is defined as the probability of surviving past a certain time, while the cumulative hazard function is defined as the total amount of risk experienced up to a certain time. In this paper, we propose a method to estimate these functions using censored data. The method is based on the concept of the survival function and the cumulative hazard function, which are defined as the probability of surviving past a certain time and the total amount of risk experienced up to a certain time, respectively.

2. Results

We apply our method to a real-world dataset of patients with a certain type of cancer. The dataset includes information on the time of diagnosis, the treatment received, and the survival status. We estimate the survival function and the cumulative hazard function using our method and compare the results with those obtained using other methods. The results show that our method provides a more accurate estimate of the survival function and the cumulative hazard function compared to other methods.

3. Conclusion

In conclusion, our method provides a robust and accurate way to estimate the survival function and the cumulative hazard function using censored data. The method is applicable to a wide range of applications, including medical and industrial settings.


\[ \begin{align*}
    \text{The mean and variance of } X & = \mu = \frac{\theta}{\alpha} \\
    \text{The exponential distribution is given by (5).} \\
    X & \sim \text{Exp} (\lambda) \\
    \text{The mean and variance of } X \sim \text{Exp}(\lambda) & = \frac{1}{\lambda} \\
    \text{The probability density and distribution function of the exponential distribution are given by (6).} \\
    X & \sim \text{Exp} (\lambda) \\
    \text{The probability density and distribution function of the exponential distribution are given by (7).} \\
    X & \sim \text{Exp} (\lambda) \\
    \end{align*} \]

\[ \begin{align*}
    \text{The mean of a Gamma distribution is equal to } \frac{\alpha}{\beta}. \\
    \text{The variance of a Gamma distribution is equal to } \frac{\alpha}{\beta^2}. \\
    \text{The probability density function of a Gamma distribution is given by (8).} \\
    X & \sim \text{Gamma} (\alpha, \beta) \\
    \text{The mean and variance of } X \sim \text{Gamma} (\alpha, \beta) & = \frac{\alpha}{\beta} \\
    \text{The probability density function of a Gamma distribution is given by (9).} \\
    X & \sim \text{Gamma} (\alpha, \beta) \\
    \text{The mean and variance of } X \sim \text{Gamma} (\alpha, \beta) & = \frac{\alpha}{\beta} \\
    \text{The probability density function of a Gamma distribution is given by (10).} \\
    X & \sim \text{Gamma} (\alpha, \beta) \\
    \text{The mean and variance of } X \sim \text{Gamma} (\alpha, \beta) & = \frac{\alpha}{\beta} \\
    \text{The probability density function of a Gamma distribution is given by (11).} \\
    X & \sim \text{Gamma} (\alpha, \beta) \\
    \text{The mean and variance of } X \sim \text{Gamma} (\alpha, \beta) & = \frac{\alpha}{\beta} \\
    \end{align*} \]
a theoretical zero mean rate of 0.027 and assuming $o = g = 0.9$. We see that the generalized UCL derived using simultaneous, control charts depends on the sample size and the sample size probability, but the resulting UCL for the MLE-based control charts on the sample size and in control probability, are a result of the MLE approach. The result is the MLE approach that is the mean plus an additional term:

\[ \text{MLE-based UCL} = \bar{X} + \sqrt{\frac{2s^2}{m}} \]

Since the test statistic is $t$, the MLE approach is used to model $t$ by its distribution.

The MLE approach is used in the second approach, which is to maximize the likelihood function, which is defined by

\[ \text{MLE} = \prod_{i=1}^{n} \left( \frac{1}{\sqrt{2\pi}} \cdot \frac{1}{\sqrt{\sigma^2}} \cdot \exp \left( \frac{-1}{2\sigma^2} \left( x_i - \mu \right)^2 \right) \right) \]

The conditional expected value of a random variable $X$ is defined as

\[ \text{Cov}(X|Y) = \text{E}[X|Y] - \text{E}[X] \]

The conditional expected value is useful when analyzing the relationship between two random variables. In the context of this equation, $X$ represents the random variable of interest, and $Y$ represents the conditioning random variable.

If we assume that $X$ and $Y$ are independent, then the conditional expected value simplifies to

\[ \text{Cov}(X|Y) = \text{E}[X|Y] - \text{E}[X] \]

The conditional expected value is expressed as

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Traditional $X$-control charts use the sample average as a test statistic, and the

2.2. Weibull CDF Method

2.1. Weibull CDF Method

The experiment shows that the Weibull CDF method is more effective than the standard normal distribution. This is because the Weibull CDF method takes into account the shape of the distribution of the data, which is not considered in the normal distribution. In contrast, the normal distribution assumes that the data are normally distributed, which may not be the case in many real-world scenarios.
2.4 Extreme Value CVF Method

The appropriate lower control limit derived using simulation in the exponential chart is given by Figure 2.

\[
\frac{(\bar{x} \pm 3\sigma)}{m} = (X)^\text{CVF}
\]

The test statistic is given by (10), where \( X \) is a random variable, \( \mu \) is the mean of the distribution, and \( \sigma \) is the standard deviation.

The CVF weight on the exponential scale is

\[
\frac{(\bar{x} \pm 3\sigma)}{m} = (X)^\text{CVF}
\]

The appropriate upper control limit derived using simulation in the exponential chart is given by Figure 2.

\[
\frac{(\bar{x} \pm 3\sigma)}{m} = (X)^\text{CVF}
\]

Through the connection between the Weibull and the exponential distribution, we see that one..
and generally applicable design factors are given in previous sections. From these approaches, we can understand the different factors that influence the comparable efficiency of various methods presented in previous sections. No approach is better than any other. However, we can measure the difference in performance of each method and compare them to determine which is more effective.

Figure 4 shows that the CEF weights are all larger than one, which indicates that the CEF approach is more effective than the other methods. The CEF approach uses a CEF weight to determine which methods are more effective.

Figure 3 shows the standardized lower control limit, $LCL$, for the CEF control chart. The $LCL$ is calculated using the formula:

$$LCL = \bar{X} - 3 \times \frac{\text{S}}{\sqrt{n}}$$

where $\bar{X}$ is the mean, $\text{S}$ is the standard deviation, and $n$ is the sample size.

The CEF approach is compared to the $X$ control chart. The CEF approach is more effective than the $X$ control chart. The CEF approach uses a CEF weight to determine which methods are more effective.

The $X$ control chart is calculated using the formula:

$$X \text{ chart} = \bar{X} \pm 3 \times \frac{\text{S}}{\sqrt{n}}$$

where $\bar{X}$ is the mean, $\text{S}$ is the standard deviation, and $n$ is the sample size.

The $X$ control chart is compared to the CEF control chart. The CEF control chart is more effective than the $X$ control chart. The CEF control chart uses a CEF weight to determine which methods are more effective.

Figure 2 shows the CEF control chart for the experiment. The $X$ control chart is calculated using the formula:

$$X \text{ chart} = \bar{X} \pm 3 \times \frac{\text{S}}{\sqrt{n}}$$

where $\bar{X}$ is the mean, $\text{S}$ is the standard deviation, and $n$ is the sample size.

The CEF control chart is compared to the $X$ control chart. The CEF control chart is more effective than the $X$ control chart. The CEF control chart uses a CEF weight to determine which methods are more effective.
The control charts depicted in the article were designed to detect decreases in the mean height of the meat. However, it is important to note that decreases in the mean height could be due to changes in the mean holding time or due to the variance in the holding time. In general, decreases in the mean height are due to changes in the mean holding time.

The control chart is effective in detecting shifts in the mean height due to decreases in the mean holding time. The chart is designed to detect shifts in the mean height when the shift is at least 2 standard deviation units. The chart compares the observed value with the expected value, and if the observed value is more than 2 standard deviation units above or below the expected value, a shift in the mean height is indicated.

In Figure 1, the observed value is compared to the expected value for a sample of 10 bags of meat. The observed mean height is 1.25, while the expected mean height is 1.0. This indicates a shift in the mean height of 0.25 units, which is significant.

In Figure 2, the observed mean height is compared to the expected mean height for a sample of 20 bags of meat. The observed mean height is 1.10, while the expected mean height is 1.0. This indicates a shift in the mean height of 0.10 units, which is also significant.

In Figure 3, the observed mean height is compared to the expected mean height for a sample of 30 bags of meat. The observed mean height is 1.05, while the expected mean height is 1.0. This indicates a shift in the mean height of 0.05 units, which is not significant.

The results from Figure 1, 2, and 3 indicate that the control chart is effective in detecting shifts in the mean height of the meat. The chart can be used to monitor the mean height of the meat and alert the production team to any changes in the mean height.

In addition to detecting shifts in the mean height, the control chart can also be used to monitor the mean holding time of the meat. The chart compares the observed mean holding time with the expected mean holding time, and if the observed mean holding time is more than 2 standard deviation units above or below the expected mean holding time, a shift in the mean holding time is indicated.

In Figure 4, the observed mean holding time is compared to the expected mean holding time for a sample of 10 bags of meat. The observed mean holding time is 1.25 hours, while the expected mean holding time is 1.0 hours. This indicates a shift in the mean holding time of 0.25 hours, which is significant.

In Figure 5, the observed mean holding time is compared to the expected mean holding time for a sample of 20 bags of meat. The observed mean holding time is 1.10 hours, while the expected mean holding time is 1.0 hours. This indicates a shift in the mean holding time of 0.10 hours, which is also significant.

In Figure 6, the observed mean holding time is compared to the expected mean holding time for a sample of 30 bags of meat. The observed mean holding time is 1.05 hours, while the expected mean holding time is 1.0 hours. This indicates a shift in the mean holding time of 0.05 hours, which is not significant.

The results from Figure 4, 5, and 6 indicate that the control chart is effective in detecting shifts in the mean holding time of the meat. The chart can be used to monitor the mean holding time of the meat and alert the production team to any changes in the mean holding time.

The control chart is designed to detect shifts in the mean height and mean holding time of the meat. The chart compares the observed values with the expected values, and if the observed values are more than 2 standard deviation units above or below the expected values, a shift in the mean height or mean holding time is indicated.

The control chart can be used to monitor the mean height and mean holding time of the meat and alert the production team to any changes in the mean height or mean holding time. The chart can be used to monitor the mean height and mean holding time of the meat on a continuous basis, and if a shift in the mean height or mean holding time is detected, the production team can take corrective action to prevent further changes in the mean height or mean holding time.

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In applications where observed data may beensored, traditional process

## Summary and Conclusions

The results of this study suggest that traditional control chart would suggest a decrease in

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References

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