Survival analysis deals with predicting the time when a specific event is going to occur.

It is also known as failure time analysis or analysis of time to death.

For example predicting the number of days a person with cancer will survive or predicting the time when a mechanical system is going to fail.

The R package named **survival** is used to carry out survival analysis.

This package contains the function **Surv()** which takes the input data as a R formula and creates a survival object among the chosen variables for analysis.

Then we use the function **survfit()** to create a plot for the analysis.

Install Package

install.packages("survival")

library(survival)

Syntax

The basic syntax for creating survival analysis in R is −

Surv(time,event)

survfit(formula)

Following is the description of the parameters used −

* **time** is the follow up time until the event occurs.
* **event** indicates the status of occurrence of the expected event.
* **formula** is the relationship between the predictor variables.

Example

We will consider the data set named "pbc" present in the survival packages installed above. It describes the survival data points about people affected with primary biliary cirrhosis (PBC) of the liver. Among the many columns present in the data set we are primarily concerned with the fields "time" and "status". Time represents the number of days between registration of the patient and earlier of the event between the patient receiving a liver transplant or death of the patient.

# Load the library.

library("survival")

# Print first few rows.

print(head(pbc))

### pplying Surv() and survfit() Function

Now we proceed to apply the **Surv()** function to the above data set and create a plot that will show the trend.

# Load the library.

library("survival")

# Create the survival object.

survfit(Surv(pbc$time,pbc$status == 2)~1)

# Give the chart file a name.

png(file = "survival.png")

# Plot the graph.

plot(survfit(Surv(pbc$time,pbc$status == 2)~1))

# Save the file.

dev.off()