Time to event analysis: Time to event analysis has also been used widely in the social sciences where interest is on analyzing time to events such as job changes, marriage, birth of children and so forth.

There are certain aspects of survival analysis data, such as censoring and non-normality, that generate great difficulty when trying to analyze the data using traditional statistical models such as multiple linear regression. **The non-normality** aspect of the data violates the normality assumption of most commonly used statistical model such as regression or ANOVA, etc.  **A censored** observation is defined as an observation with incomplete information.

When an observation is **right censored** it means that the information is incomplete because the subject did not have an event during the time that the subject was part of the study. The point of survival analysis is to follow subjects over time and observe at which point in time they experience the event of interest. It often happens that the study does not span enough time in order to observe the event for all the subjects in the study. This could be due to a number of reasons. Perhaps subjects drop out of the study for reasons unrelated to the study (i.e. patients moving to another area and leaving no forwarding address).

The common feature of all of these examples is that if the subject had been able to stay in the study then it would have been possible to observe the time of the event eventually.

What is survival data?

Time-to-event data that consist of a distinct start time and end time.

Examples from cancer

* Time from surgery to death
* Time from start of treatment to progression
* Time from response to recurrence

Examples from other fields

Time-to-event data are common in many fields including, but not limited to

* Time from HIV infection to development of AIDS
* Time to heart attack
* Time to onset of substance abuse
* Time to initiation of sexual activity
* Time to machine malfunction

Types of censoring

A subject may be censored due to:

* Loss to follow-up
* Withdrawal from study
* No event by end of fixed study period

Specifically these are examples of **right** censoring.

Left censoring and interval censoring are also possible, and methods exist to analyze this type of data, but this training will be limited to right censoring.