

The Bootstrap

- Bootstrap is also one of the Re-Sampling method and a widely applicable and extremely powerful statistical tool that can be used to quantify the uncertainty associated with a given estimator or statistical learning method.
- As a simple example, the bootstrap can be used to estimate the standard errors of the coefficients from a linear regression fit.
- We explore the use of the bootstrap to assess the variability associated with the regression coefficients in a linear model fit.
- Performing a bootstrap analysis in R entails only two steps.
- First, we must create a function that computes the statistic of interest.
- Second, we use the `boot()` function, which is part of the `boot` library, to perform the bootstrap by repeatedly sampling observations from the data set with replacement.
- Bootstrap is going to use 2/3 or 60% of observations from every random sampling from the given data set.

Estimating the Accuracy

- We use the bootstrap approach in order to assess the variability of the estimates for β_0 , β_1 , and so on.
- We will compare the estimates and Standard errors obtained using the bootstrap to those obtained from linear regression model.
- Whenever if you find a large difference between these comparisons then you need to select the bootstrap method estimates among from both methods.