This package consists of three R files: Main.R, Core\_functions.R, and Covariate\_mat.rdata.

1. Main.R contains the main codes for point and interval estimation. Please remember to set directory in Line 2 before running this file.

This file has four blocks.

* Block 1 (Lines 10~58) is used for data generation.
* Block 2 (Lines 62~88) is used for selecting tuning parameters (i.e., lambda, \overline{\lambda}, and \tilde{\lambda}).
  + There are two ways to choose the tuning parameter. The first one is to randomly choose from all candidate values; the second one is to use cross-validation (CV). In both cases, we need to manually specify the candidate values. Please do so in Lines 71~74. The logical variable CV\_flag controls which method to use: CV\_flag = FALSE means random selection and CV\_flag = TRUE means cross-validation. The default value for CV\_flag is FALSE.
  + If CV\_flag = TRUE, which means CV will be used, please specify the number of CV folds in Line 78.
  + Note: *running CV is time-consuming!* When sample size = 100 (default value in our script), it took 50 mins on a PC with a Core i7 CPU (1.90 GHz).
* Block 3 (Lines 92~123) is used for point estimation. The estimates for the regression coefficients beta and alpha are given in Lines 117 and 118.
  + When size = 100, it took 2.5 mins on a PC with a Core i7 CPU (1.90 GHz).
* Block 4 (Lines 127~132) is used for interval estimation. The confidence intervals for beta and alpha are given in Lines 128 and 129.
  + When size = 100, it took 7 mins on a PC with a Core i7 CPU (1.90 GHz).

1. Core\_functions.R contains functions that will be called in Main.R.
2. Covariate\_mat.rdata contains the covariates for the 1252 patients in our real data application section. It will be called by Main.R for data generation.

* Note: The matrix provided here is not the actual patient data due to confidentiality restrictions. Instead, it is a synthetic dataset generated to mimic the characteristics of the true data.