All the work was done in R version 3.4.4

Before running the codes, set the fault directory to where the codes folder is located by using setwd("path").

This folder contains the codes for two-time point treatment simulation.

This simulation study considers these factors: a) linear vs nonlinear outcome; b) level of confounding-high, moderate and low; c) sample size-200, 500, 1000; d) model specification-both propensity and prediction models correct, misspecified prediction, and misspecified propensity models; e) methods-AIPTW, G Computation, IPTW, and PENCOMP.

Inside the twoTimePointSimulation folder, there are subfolders that store the simulation results from each specification. For example sampleSize200 > LinearOutcome (NonLinearOutcome) > AIPTW_Results (IPTW_Results, gcompute_Results, PENCOMP_Results). These folders store simulation results from pencompRun.R, IPTWRun.R, AIPTWRun.R and gcomputeRun.R.

The **Functions** folder contains all the functions used for this simulation.

1) simulateData.R--simulate a dataset for each specification
2) truth.R—estimate the true treatment effects
3) pencompRun.R—obtain the estimates for PENCOMP for each specification; results are stored in the subfolder PENCOMP_Results.
4) IPTWRun.R—obtain the estimates for IPTW for each specification; results are stored in the subfolder IPTW_Results.
5) AIPTWRun.R—obtain the estimates for AIPTW for each specification; results are stored in the subfolder AIPTW_Results.
6) gcomputeRun.R—obtain the estimates for g computation for each specification; results are stored in the gcompute_Results.
7) After obtaining all the estimates, see the **FiguresandTables** folder for the codes that we used to combine the simulation results to generate tables and figures in our paper.
   a) combineResult_step1.R and combineResult_step2.R to combine the results
   b) use the following scripts to reproduce the figures and tables for the two-time point simulation:
      a. coverage_LinearOutcome_Figure7.R for Figure 7;
      b. coverage_NonLinearOutcome_Figure8.R for Figure 8;
      c. coverageTables_Table19-23-27.R for tables 19, 23, 27;
      d. relativeBiasTables_Table17-21-25.R for tables 17, 21, 25;
      e. relativeRMSE_Linear_Figure5.R for Figure 5;
      f. relativeRMSE_NonLinear_Figure6.R for Figure 6;
      g. relativeRMSETables_Table18-22-26.R for tables 18, 22, 26;
      h. relativeWidthTables_Table20-24-28.R for tables 20, 24, 28;

   Note inside the **FiguresandTables** folder, there are subfolders: AIPTW_Result, gcompute_Result, IPTW_Result, and PENCOMP_Results contain the results from combineResult_step2.R ; and the subfolders paperPlots and paperTables contain figures and tables we created for our paper (see scripts in 7b).