

All the work was done in R version 3.4.4

This folder contains the codes for one 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 oneTimePointSimulation 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 effect by simulating a large population with both potentials outcomes observed for each subject.
- 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 simulation results
 - b) use the following scripts to reproduce the figures and tables for the one-time point simulation:
 - a. coverage_Figure4.R for Figure 4;
 - b. relativeRMSE_Figure3.R for Figure 3;
 - c. coverageTables_Table7-11-15.R for Tables 7,11,15;
 - d. relativeBiasTables_Table5-9-13.R for Tables 5, 9, 13;
 - e. relativeRMSETables_Table6-10-14.R for Tables 6, 10, 14;
 - f. relativeWidthTables_Table8-12-16.R for Tables 8, 12, 16 ;

Note inside the **FiguresandTables** folder, there are subfolders: AIPTW_Results, gcompute_Results, IPTW_Results, and PENCOMP_Results which 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).