

TABLE S3 Results of ATE Estimates from the Single Covariate Simulation Study Setting 3:
 $\{\gamma_0, \gamma_1, \gamma_2, \gamma_3\} = \{0.5, 0, 0.7, \sqrt{0.75}\}$.

Method	Sample Size	RMSE	MAE	Bias	Rc	SE_{avg}	SE_{emp}
GPMatch	100	0.231	0.156	0.009	0.96	0.238	0.232
	200	0.166	0.107	-0.003	0.93	0.164	0.167
	400	0.115	0.088	0.003	0.96	0.114	0.115
QNT_PS X	100	0.554	0.443	0.408	0.91	0.442	0.377
	200	0.364	0.282	0.263	0.92	0.298	0.252
	400	0.328	0.278	0.260	0.77	0.211	0.201
LM	100	0.364	0.256	0.121	0.95	0.350	0.345
	200	0.279	0.179	0.155	0.88	0.256	0.233
	400	0.230	0.192	0.164	0.87	0.181	0.162
AIPTW1	100	0.533	0.432	0.413	0.81	0.355	0.339
	200	0.544	0.512	0.462	0.58	0.282	0.289
	400	0.504	0.466	0.469	0.24	0.196	0.185
AIPTW2	100	0.507	0.430	0.401	0.79	0.322	0.311
	200	0.481	0.444	0.421	0.54	0.234	0.234
	400	0.456	0.424	0.428	0.23	0.162	0.157
LM_PS1	100	0.374	0.234	0.213	0.80	0.261	0.309
	200	0.382	0.281	0.289	0.67	0.191	0.251
	400	0.335	0.282	0.288	0.44	0.133	0.171
LM_PS2	100	0.500	0.384	0.386	0.84	0.339	0.319
	200	0.495	0.432	0.427	0.61	0.251	0.251
	400	0.464	0.416	0.433	0.30	0.177	0.166
LM_sp(PS1)	100	0.235	0.162	-0.001	0.94	0.235	0.237
	200	0.170	0.114	-0.012	0.92	0.165	0.170
	400	0.115	0.090	0.002	0.96	0.115	0.116
LM_sp(PS2)	100	0.232	0.161	0.005	0.97	0.238	0.233
	200	0.167	0.114	-0.008	0.95	0.167	0.167
	400	0.115	0.094	0.002	0.97	0.117	0.115
Bart	100	0.274	0.191	0.114	0.97	0.265	0.251
	200	0.195	0.116	0.071	0.93	0.188	0.182
	400	0.138	0.095	0.057	0.94	0.136	0.126

RMSE = root mean square error; MAE = median absolute error; Bias = Estimate-True; Rc = Rate of coverage by the 95% interval estimate; SE_{avg} = average of standard error estimate from all replicate; SE_{emp} = standard error of ATE estimates from all replicate; GPMatch: Bayesian structural model with Gaussian process prior, only treatment effect is included in the mean function; covariance function includes X .

QNT_PS: Propensity score sub-classification by quintiles.

AIPTW1 & AIPTW2: augmented inversed probability of treatment weighting.

LM_PS1 & LM_PS2: linear regression modeling with propensity score adjustment;

LM_sp(PS1) & LM_sp(PS2): linear regression modeling with spline fit propensity score adjustment;

BART: Bayesian additive regression tree.

Propensity scores are estimated using different logistic models, with AIPTW1, LM_PS1 & LM_sp(PS1) use PS estimated using logistic model $\text{logit}A \sim X$; and AIPTW2, LM_PS2 & LM_sp(PS2) use PS estimated using logistic model $\text{logit}A \sim X^{1/3}$. QNT_PS using either PS estimates produces identical results.