

Simulation Results

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Last compiled on January 03, 2024

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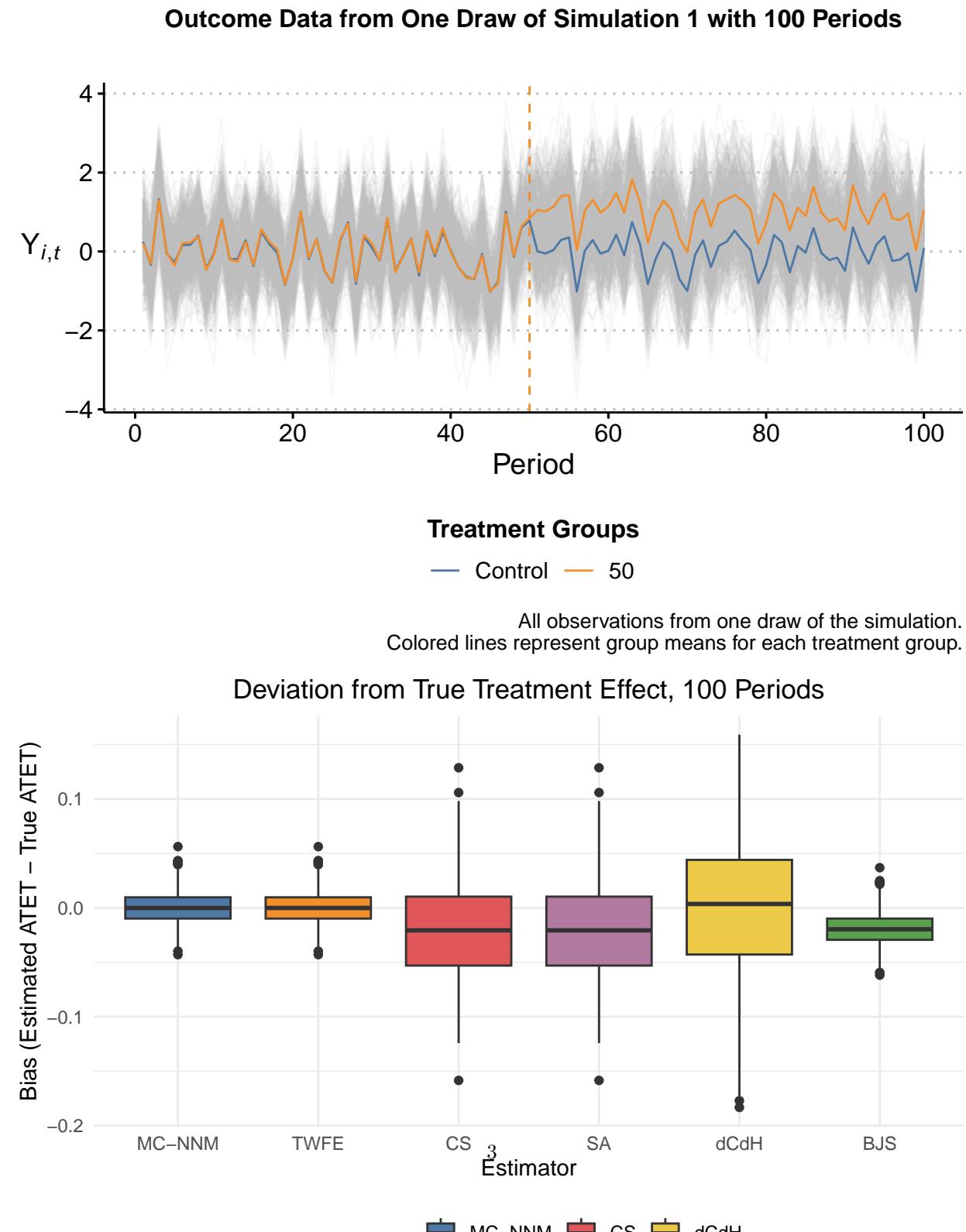
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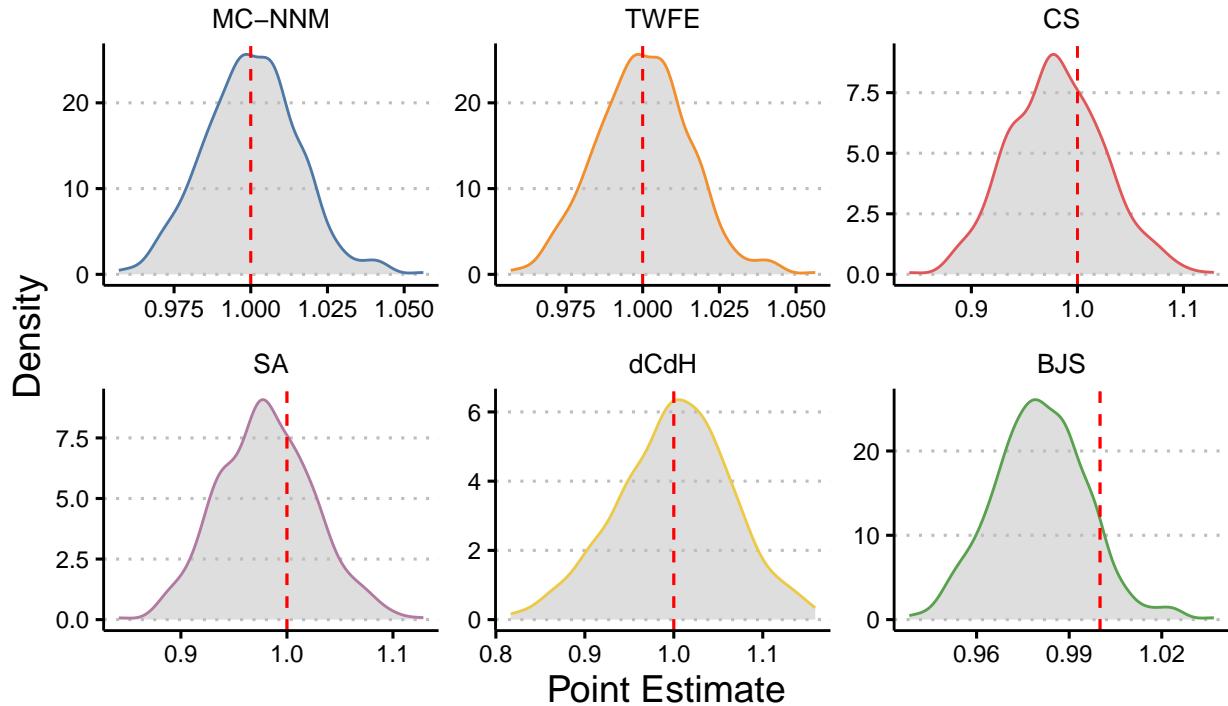
Instructions to replicate can be found [here](#)

Full thesis can be found [here](#)

**DGP 1: One treatment group, TE is unit-and time- homogeneous,
100 periods**



Distributions of ATET Estimates, 100 Periods



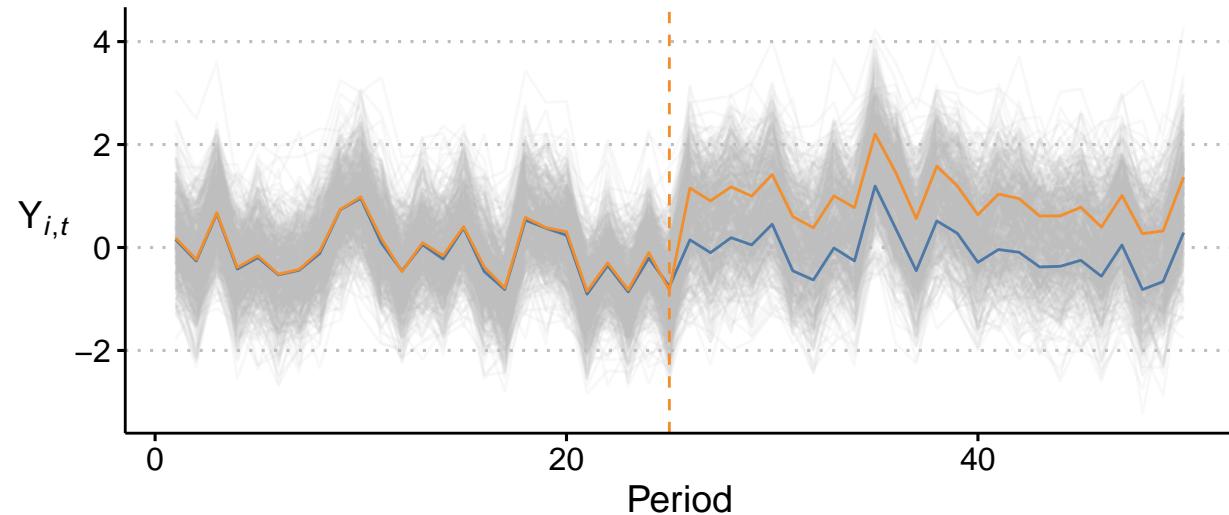
Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

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	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	1.000	1.000	1.000	0.000		
2	MC-NNM	0.957	1.000	1.056	0.015	0.000	0.015
3	TWFE	0.957	1.000	1.056	0.015	0.000	0.015
4	CS	0.842	0.981	1.129	0.045	-0.019	0.049
5	SA	0.842	0.981	1.129	0.045	-0.019	0.049
6	dCdH	0.817	1.001	1.159	0.063	0.001	0.063
7	BJS	0.938	0.981	1.037	0.015	-0.019	0.024

50 periods

Outcome Data from One Draw of Simulation 1 with 50 Periods

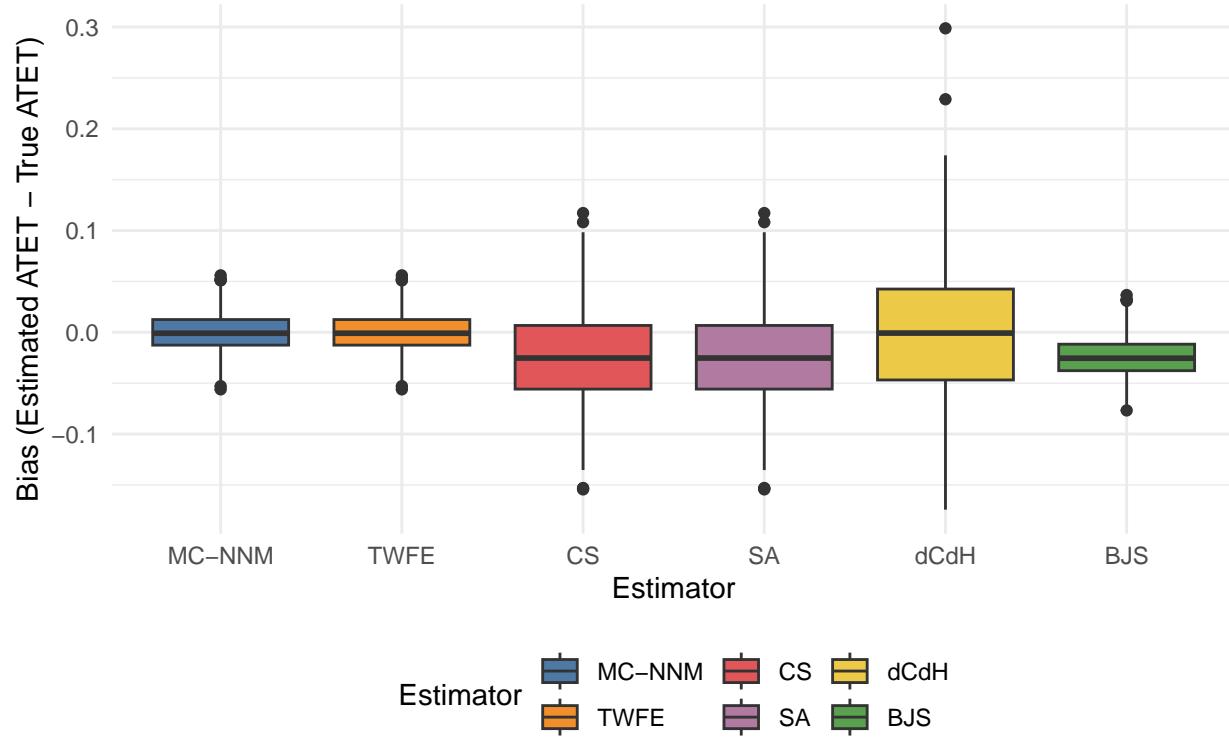


Treatment Groups

— Control — 25

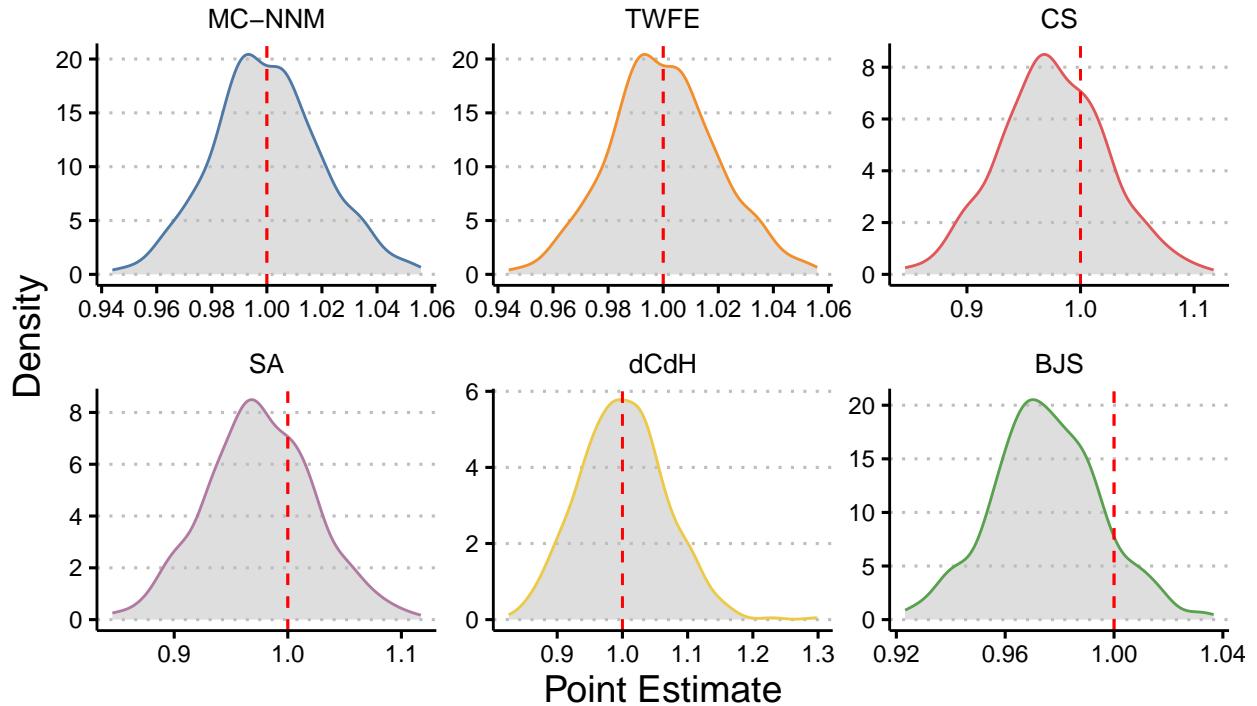
All observations from one draw of the simulation.
Colored lines represent group means for each treatment group.

Deviation from True Treatment Effect, 50 Periods



Distribution of the bias of each estimator over 500 iterations

Distributions of ATET Estimates, 50 Periods

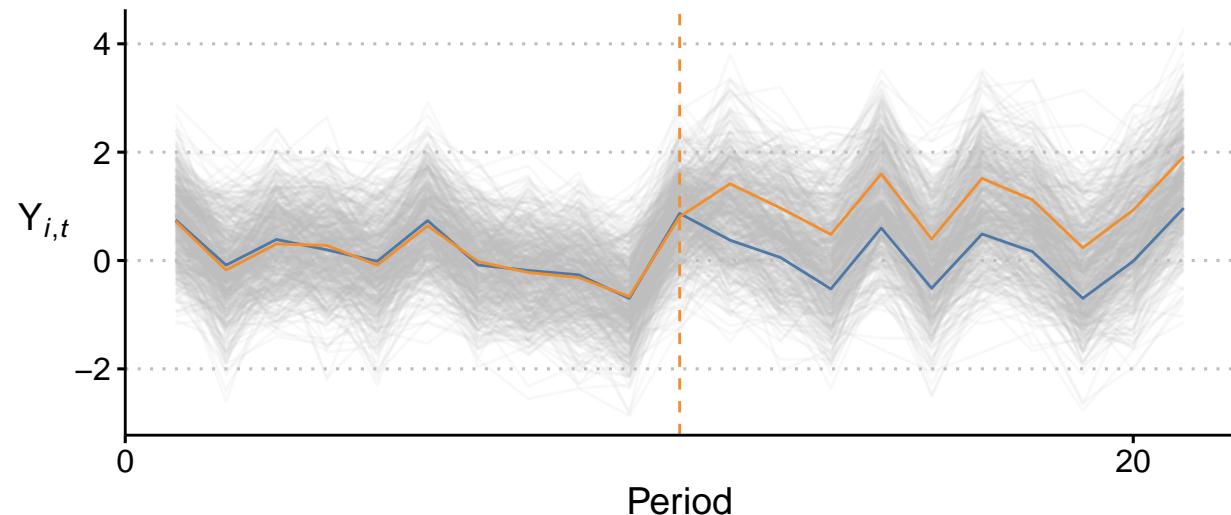


Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	1.000	1.000	1.000	0.000		
2	MC-NNM	0.944	1.000	1.056	0.020	0.000	0.020
3	TWFE	0.944	1.000	1.056	0.020	0.000	0.020
4	CS	0.846	0.976	1.117	0.048	-0.024	0.053
5	SA	0.846	0.976	1.117	0.048	-0.024	0.053
6	dCdH	0.826	1.000	1.299	0.066	0.000	0.066
7	BJS	0.923	0.975	1.037	0.020	-0.025	0.032

21 periods

Outcome Data from One Draw of Simulation 1 with 21 Periods

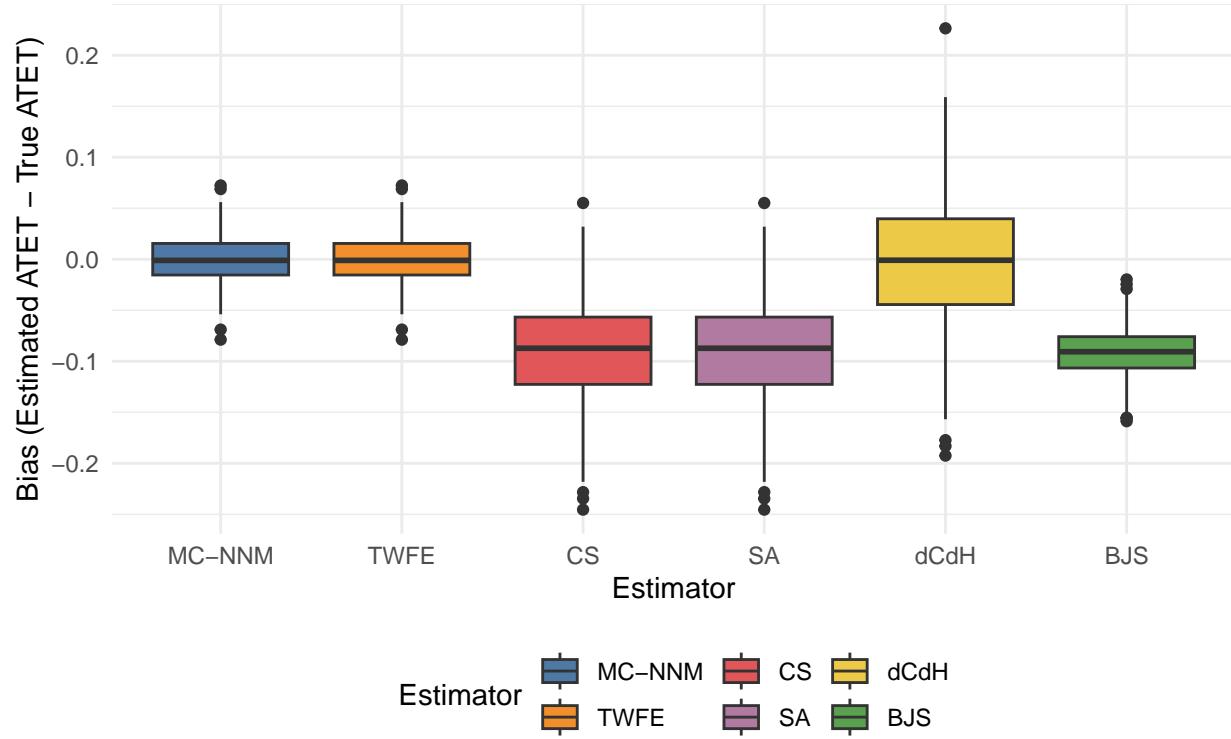


Treatment Groups

— Control — 11

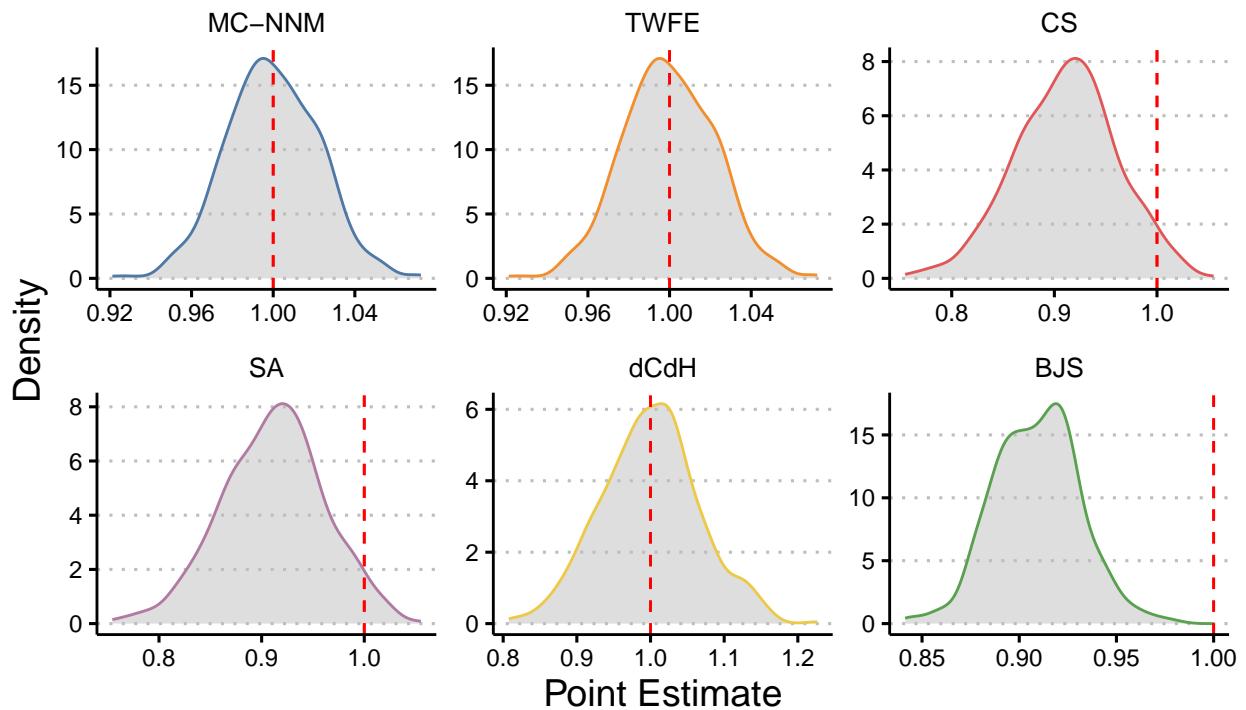
All observations from one draw of the simulation.
Colored lines represent group means for each treatment group.

Deviation from True Treatment Effect, 21 Periods



Distribution of the bias of each estimator over 500 iterations

Distributions of ATET Estimates, 21 Periods

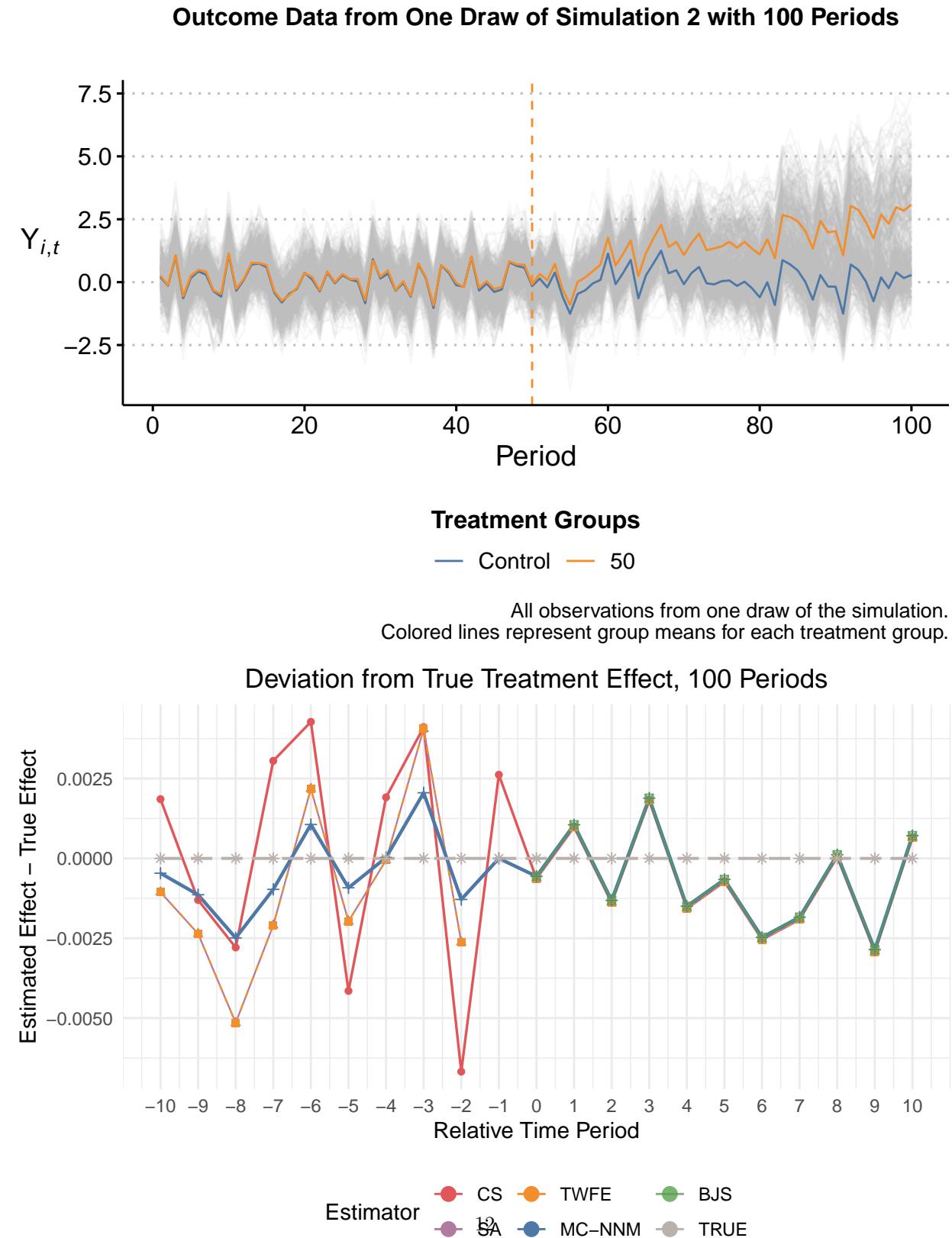


Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	1.000	1.000	1.000	0.000		
2	MC-NNM	0.921	1.000	1.072	0.023	-0.000	0.023
3	TWFE	0.921	1.000	1.072	0.023	-0.000	0.023
4	CS	0.755	0.911	1.055	0.050	-0.089	0.102
5	SA	0.755	0.911	1.055	0.050	-0.089	0.102
6	dCdH	0.808	0.999	1.226	0.066	-0.001	0.066
7	BJS	0.841	0.909	0.980	0.022	-0.091	0.094

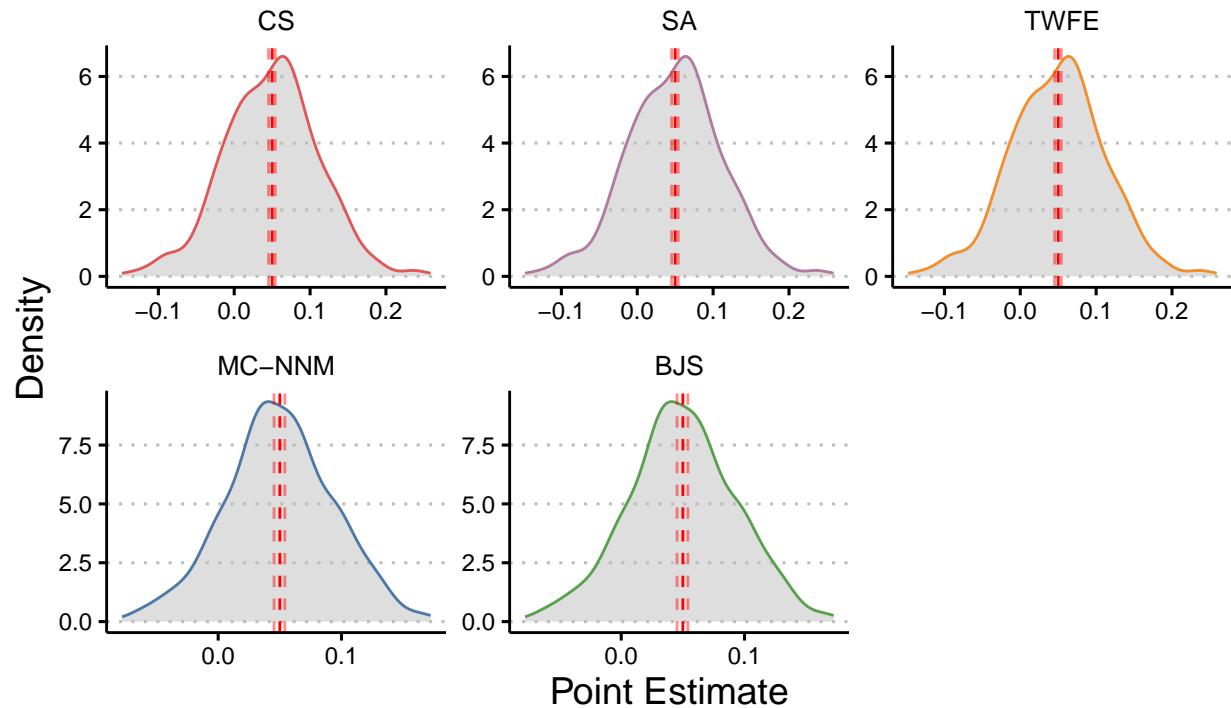
DGP 2: One treatment group, TE is unit-homogeneous, time-varying

100 periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 100 Periods

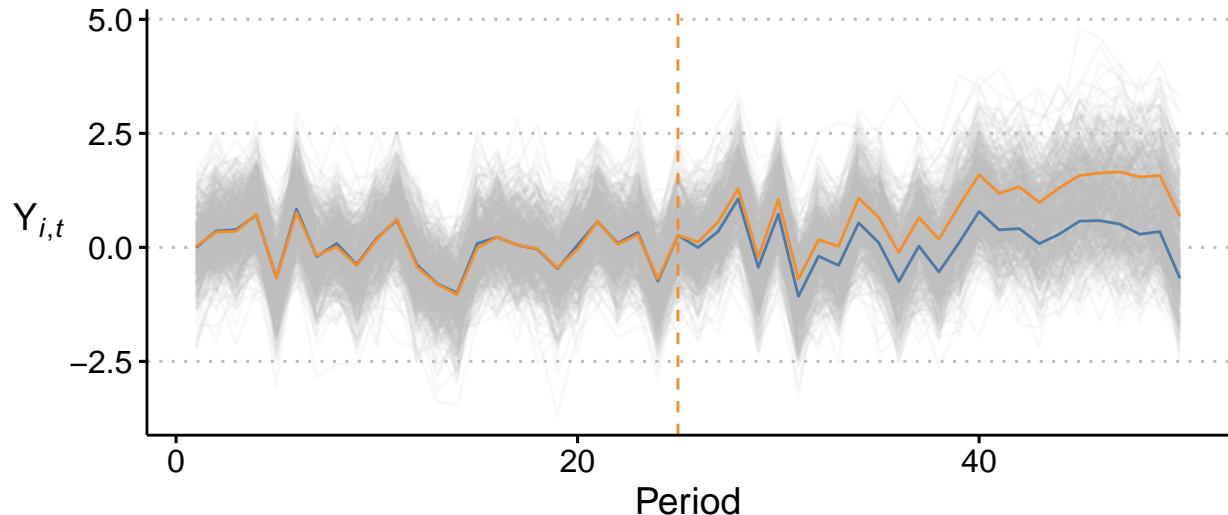


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.045	0.050	0.054	0.002			
2	MC-NNM	-0.078	0.049	0.172	0.044	-0.001	0.044	0.000
3	TWFE	-0.148	0.049	0.259	0.062	-0.001	0.062	0.000
4	CS	-0.148	0.049	0.259	0.062	-0.001	0.062	0.000
5	SA	-0.148	0.049	0.259	0.062	-0.001	0.062	0.000
6	BJS	-0.078	0.049	0.172	0.044	-0.001	0.044	0.000

50 periods

Outcome Data from One Draw of Simulation 2 with 50 Periods

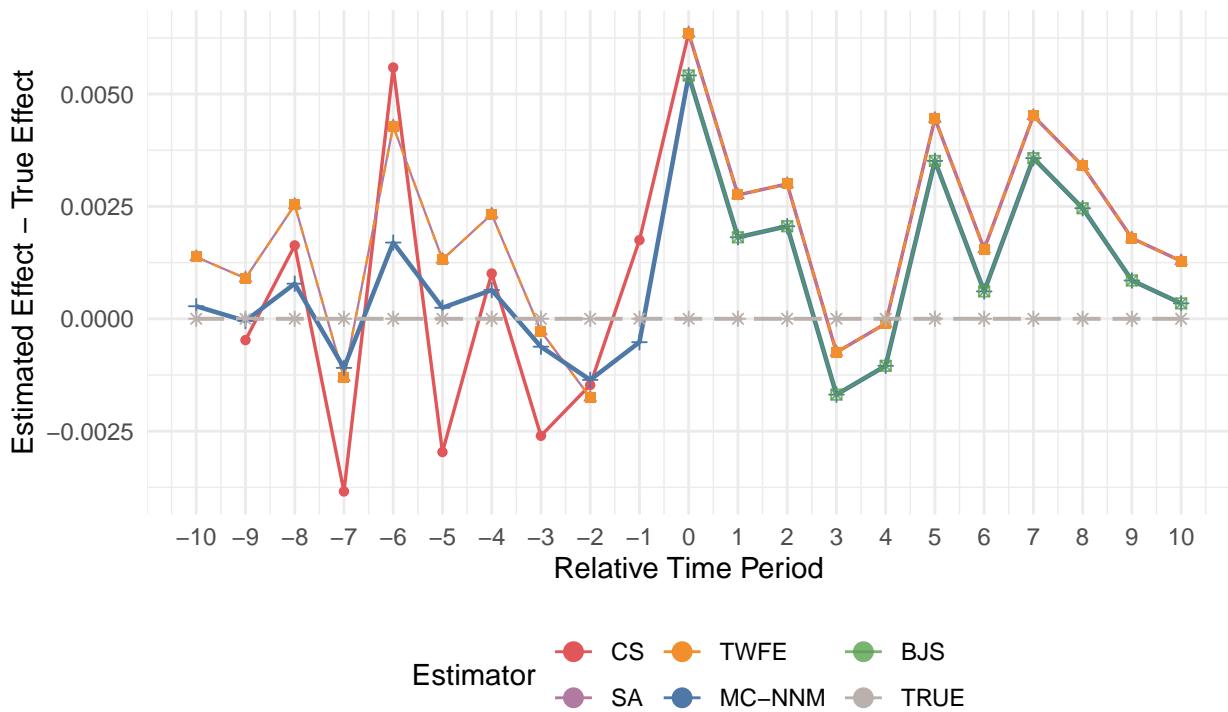


Treatment Groups

— Control — 25

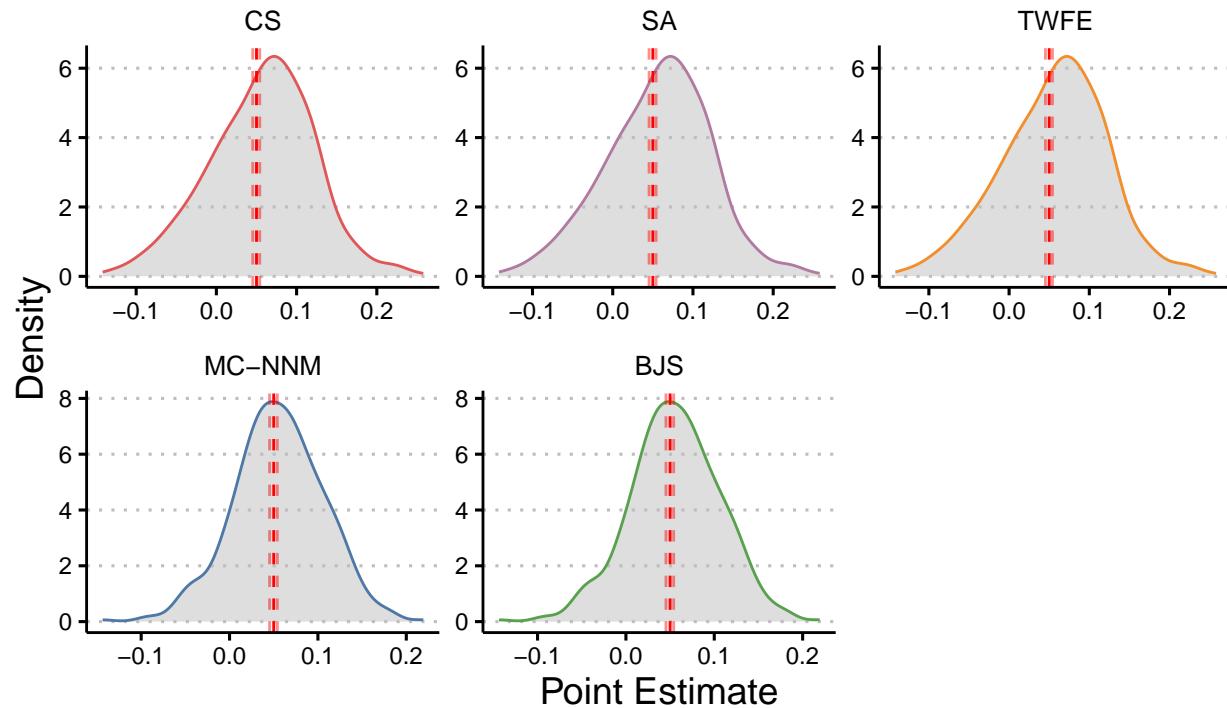
All observations from one draw of the simulation.
Colored lines represent group means for each treatment group.

Deviation from True Treatment Effect, 50 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 50 Periods

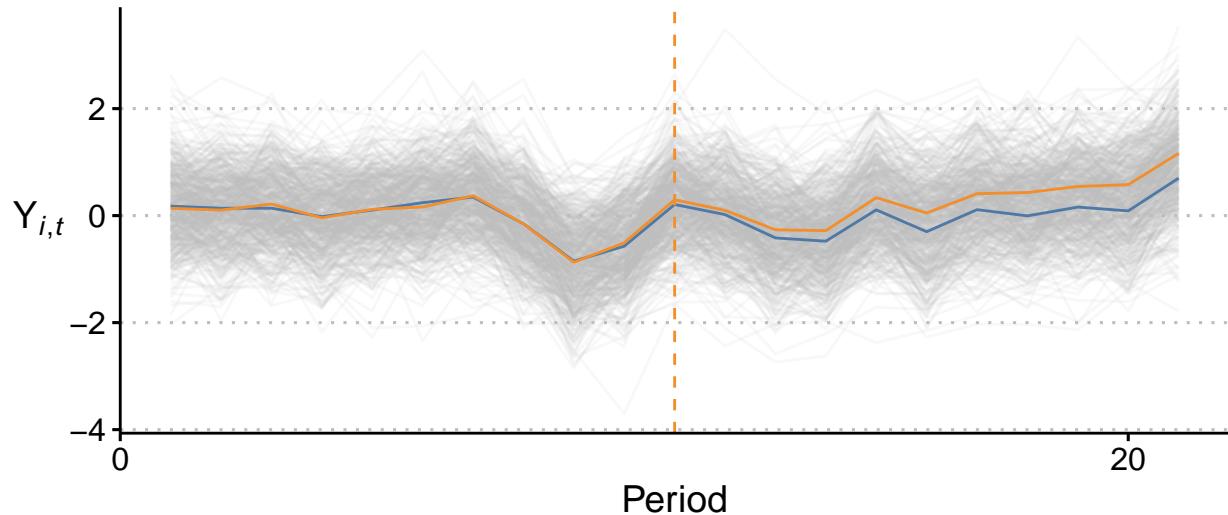


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.045	0.050	0.054	0.002			
2	MC-NNM	-0.144	0.055	0.219	0.051	0.005	0.051	0.001
3	TWFE	-0.142	0.056	0.258	0.065	0.006	0.066	0.002
4	CS	-0.142	0.056	0.258	0.065	0.006	0.066	0.001
5	SA	-0.142	0.056	0.258	0.065	0.006	0.066	0.002
6	BJS	-0.144	0.055	0.219	0.051	0.005	0.051	0.001

21 periods

Outcome Data from One Draw of Simulation 2 with 21 Periods

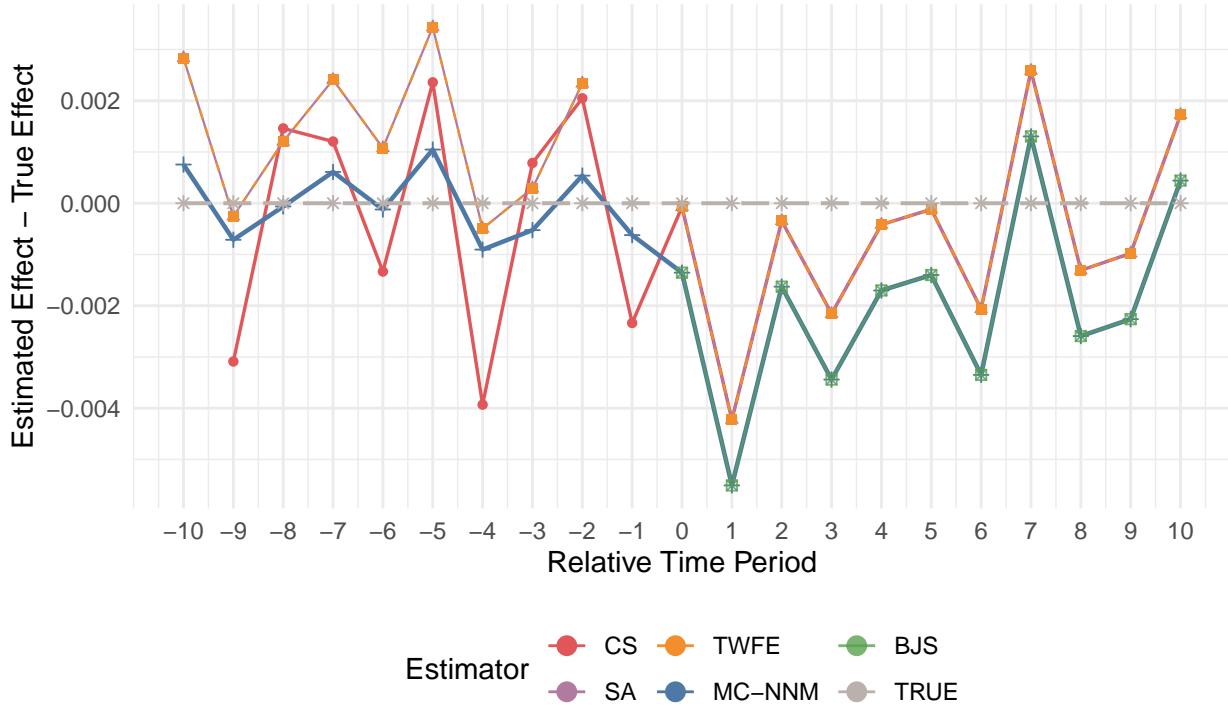


Treatment Groups

— Control — 11

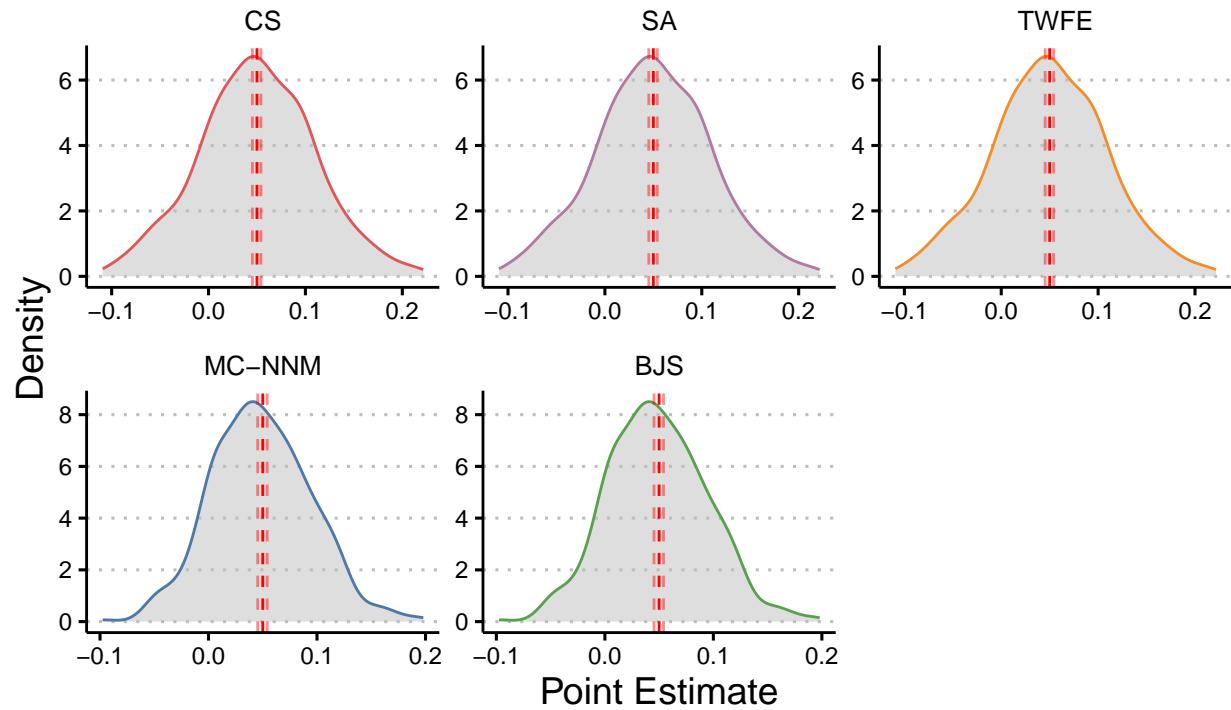
All observations from one draw of the simulation.
Colored lines represent group means for each treatment group.

Deviation from True Treatment Effect, 21 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 21 Periods

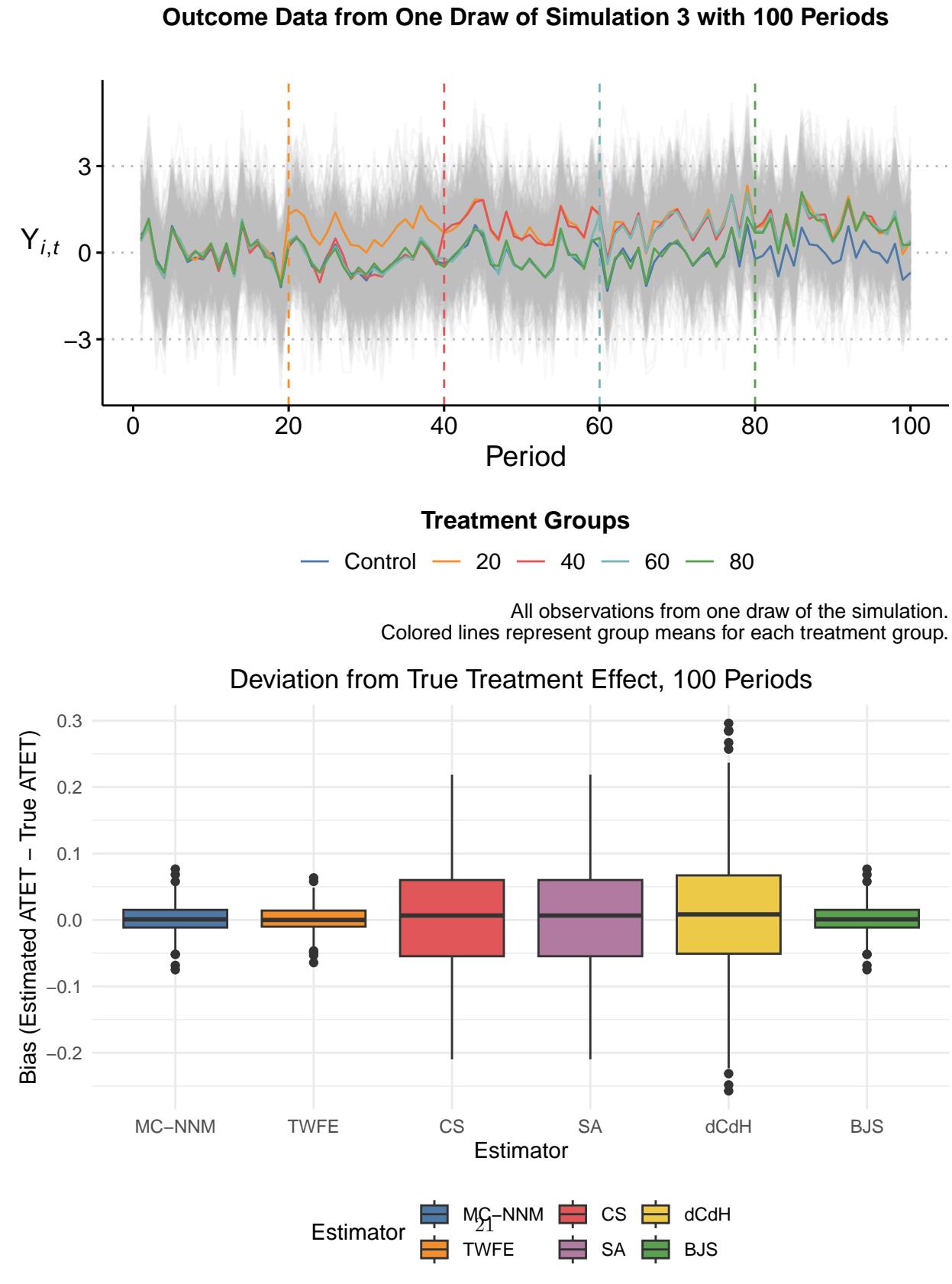


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

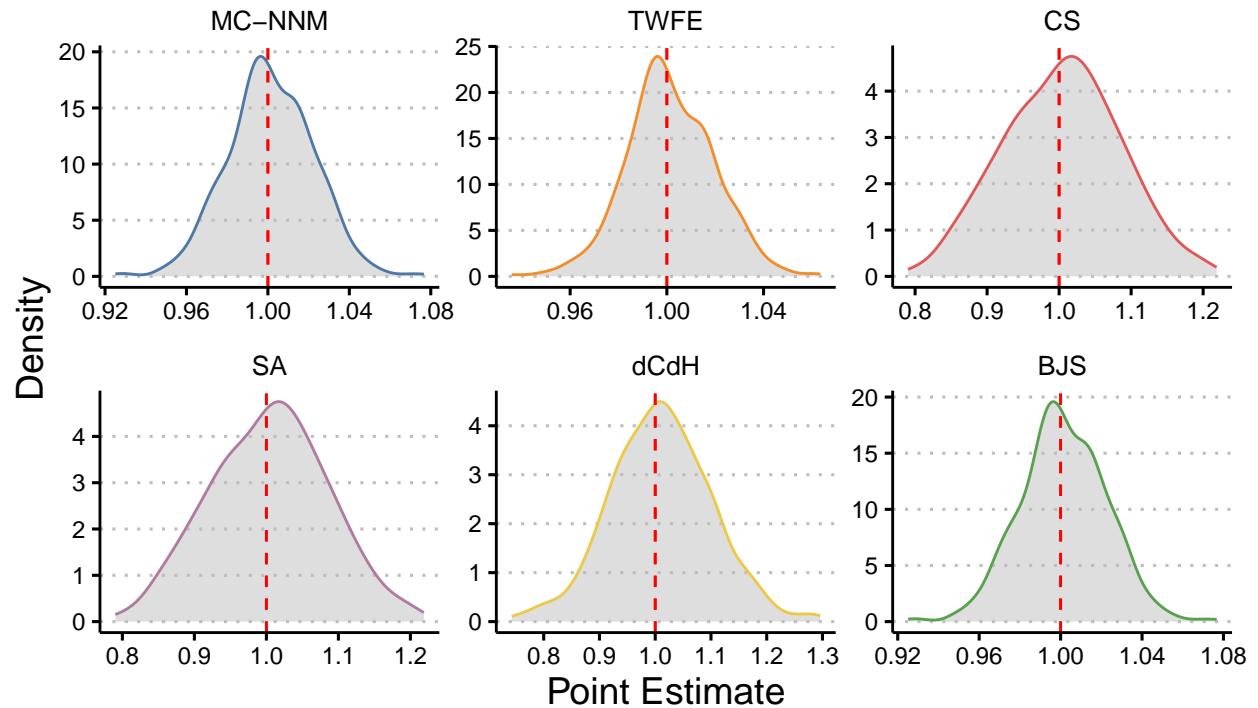
	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.045	0.050	0.054	0.002			
2	MC-NNM	-0.098	0.049	0.198	0.046	-0.001	0.046	-0.001
3	TWFE	-0.109	0.050	0.222	0.060	-0.000	0.060	0.000
4	CS	-0.109	0.050	0.222	0.060	-0.000	0.060	-0.001
5	SA	-0.109	0.050	0.222	0.060	-0.000	0.060	0.000
6	BJS	-0.098	0.049	0.198	0.046	-0.001	0.046	-0.002

DGP 3: Multiple Treatment Groups, Time-Invariant Homogeneous TE

100 periods



Distributions of ATET Estimates, 100 Periods

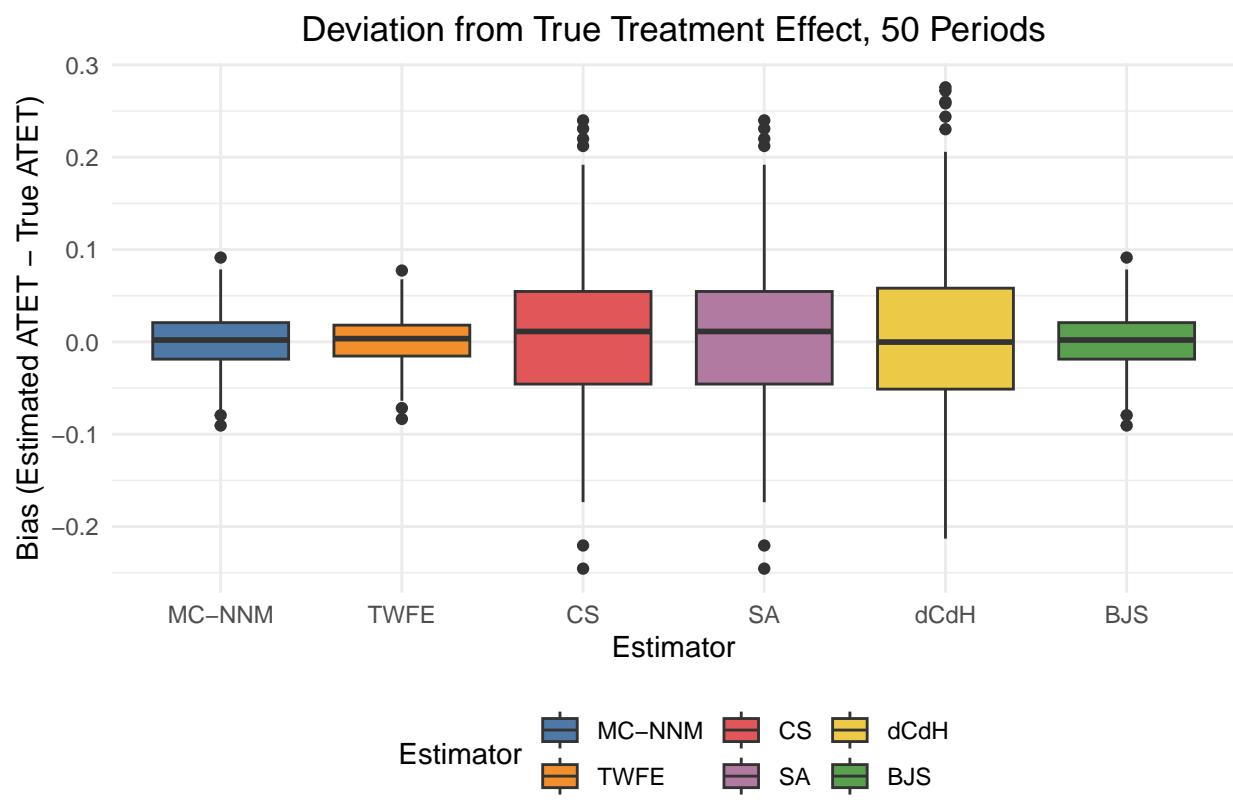
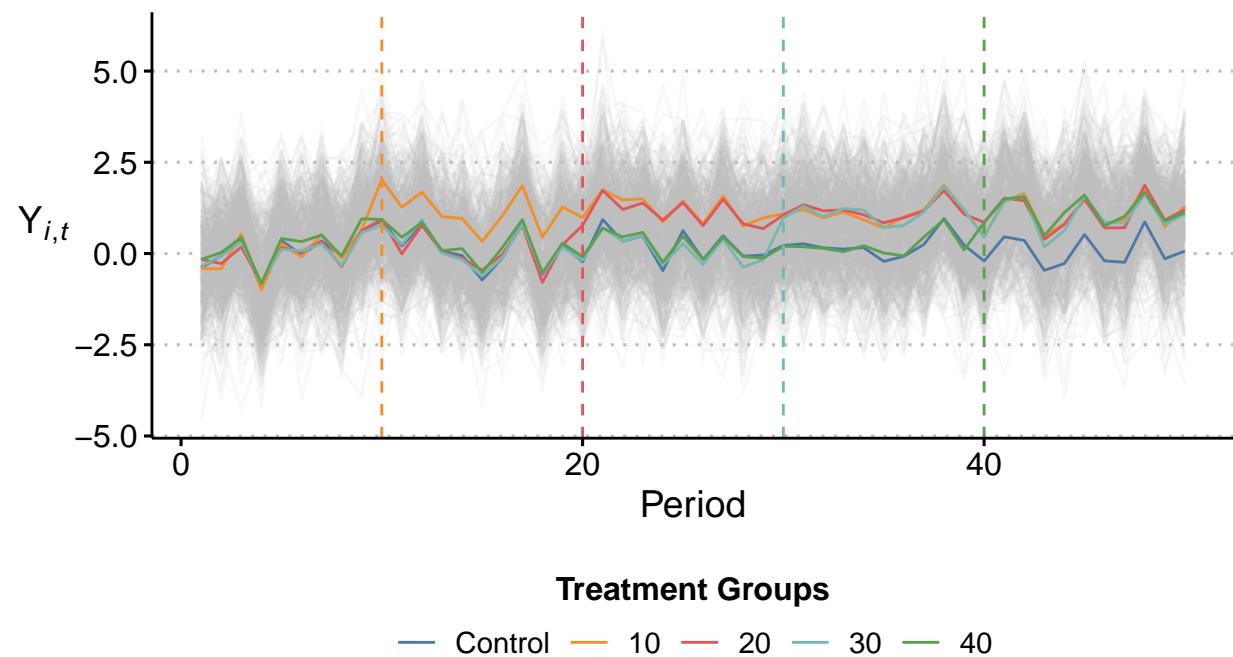


Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

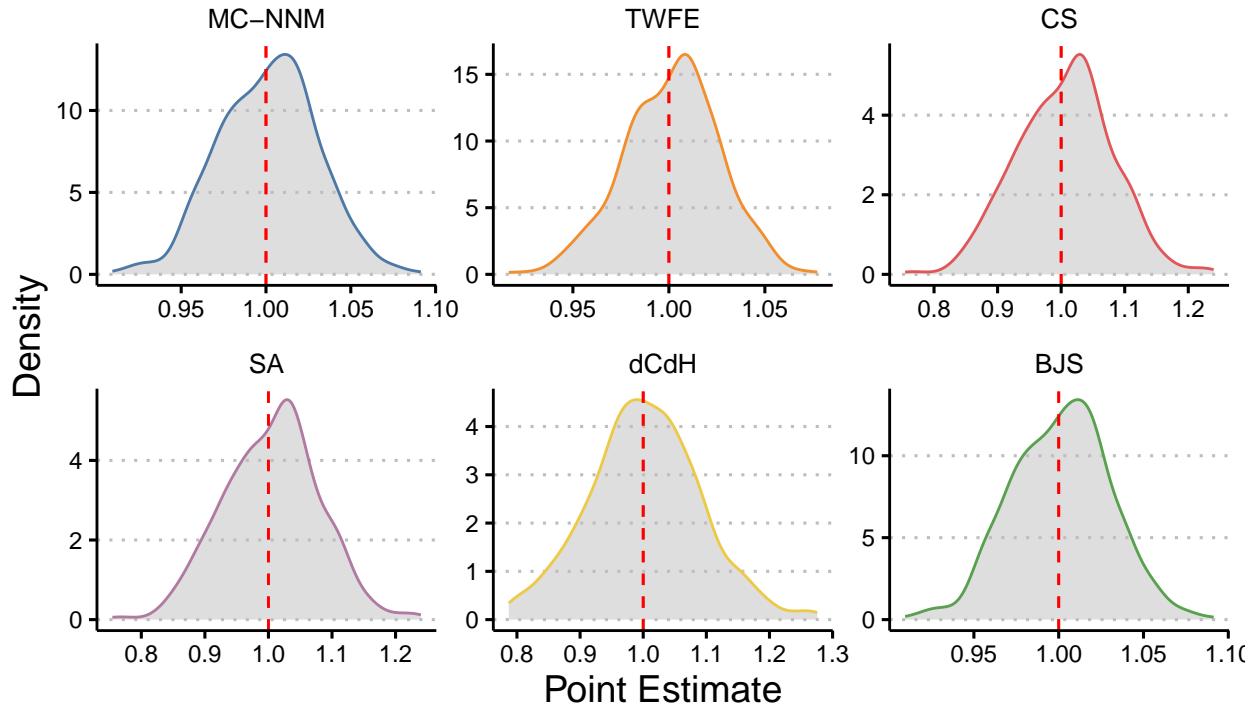
	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	1.000	1.000	1.000	0.000		
2	MC-NNM	0.925	1.001	1.077	0.021	0.001	0.021
3	TWFE	0.936	1.001	1.063	0.018	0.001	0.018
4	CS	0.790	1.004	1.219	0.081	0.004	0.081
5	SA	0.790	1.004	1.219	0.081	0.004	0.081
6	dCdH	0.743	1.011	1.296	0.091	0.011	0.091
7	BJS	0.925	1.001	1.077	0.021	0.001	0.021

50 periods

Outcome Data from One Draw of Simulation 3 with 50 Periods



Distributions of ATET Estimates, 50 Periods

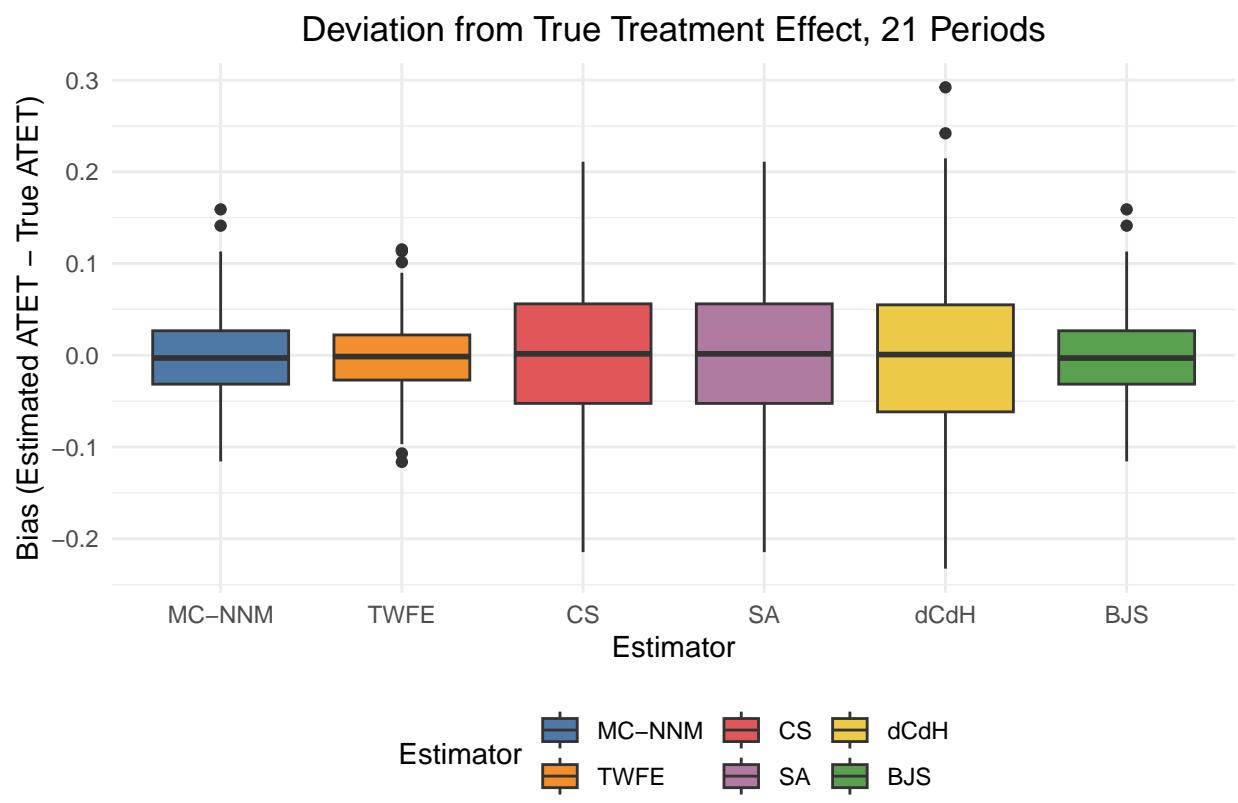
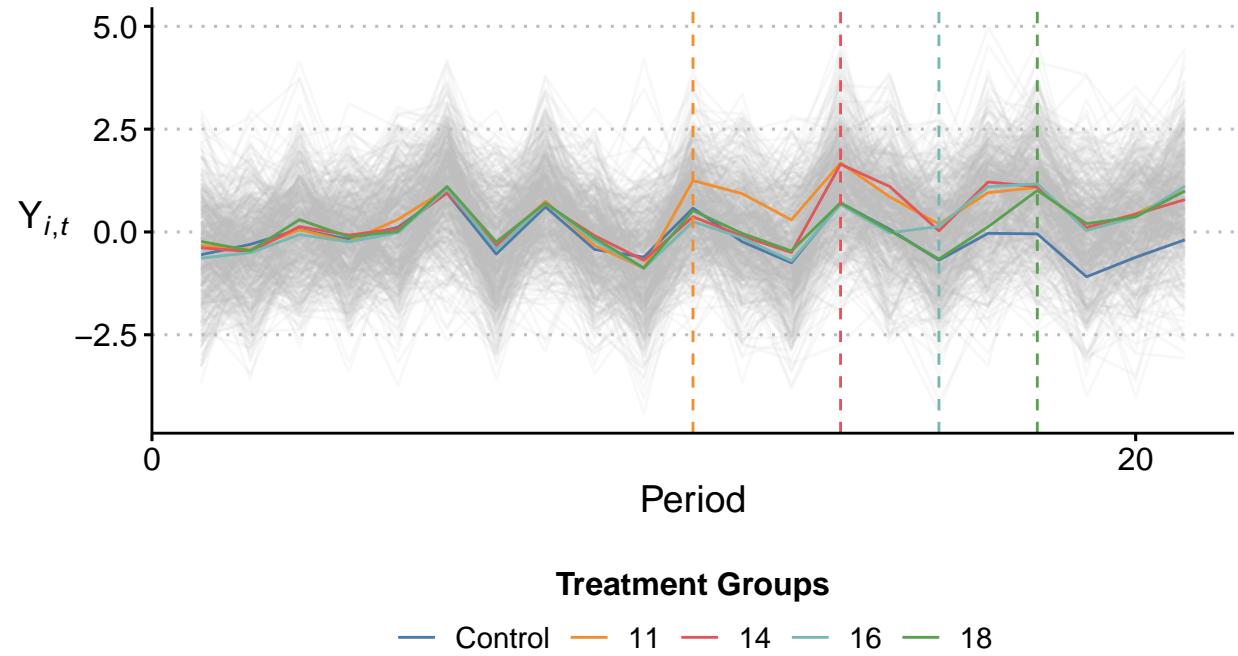


Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

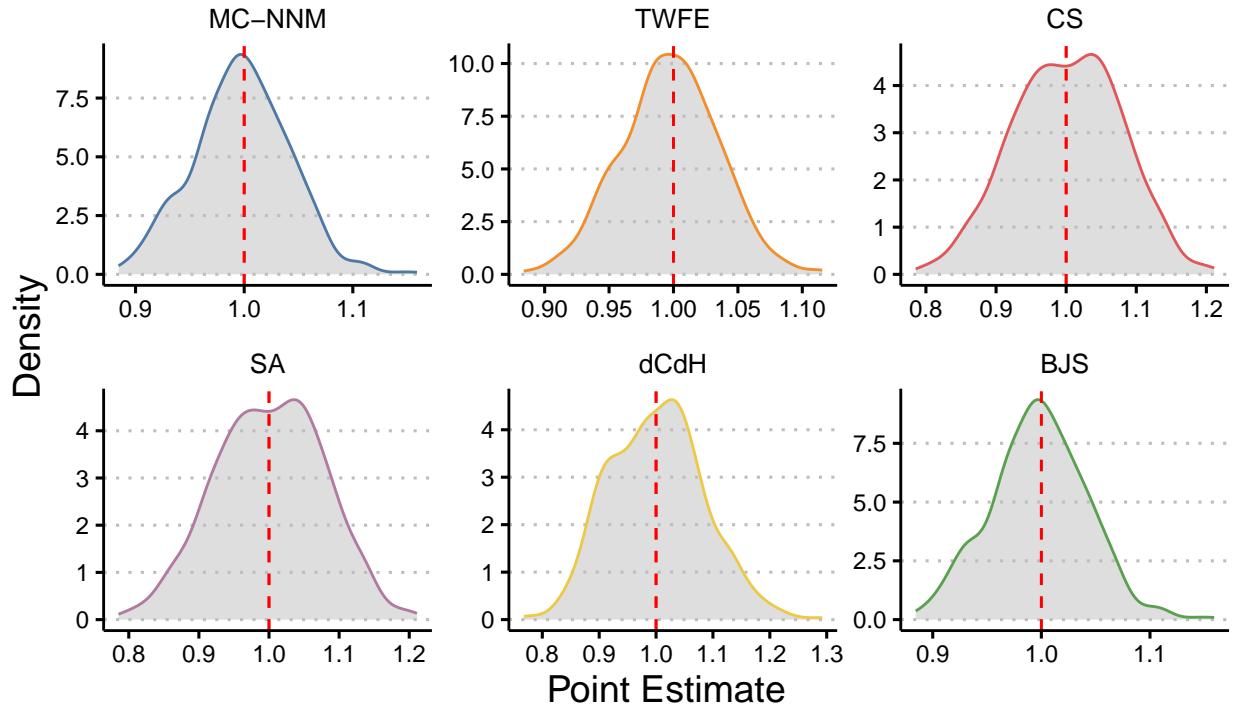
	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	1.000	1.000	1.000	0.000		
2	MC-NNM	0.909	1.001	1.091	0.029	0.001	0.029
3	TWFE	0.917	1.002	1.077	0.025	0.002	0.025
4	CS	0.754	1.006	1.240	0.075	0.006	0.075
5	SA	0.754	1.006	1.240	0.075	0.006	0.075
6	dCdH	0.787	1.003	1.276	0.088	0.003	0.088
7	BJS	0.909	1.001	1.091	0.029	0.001	0.029

21 periods

Outcome Data from One Draw of Simulation 3 with 21 Periods



Distributions of ATET Estimates, 21 Periods



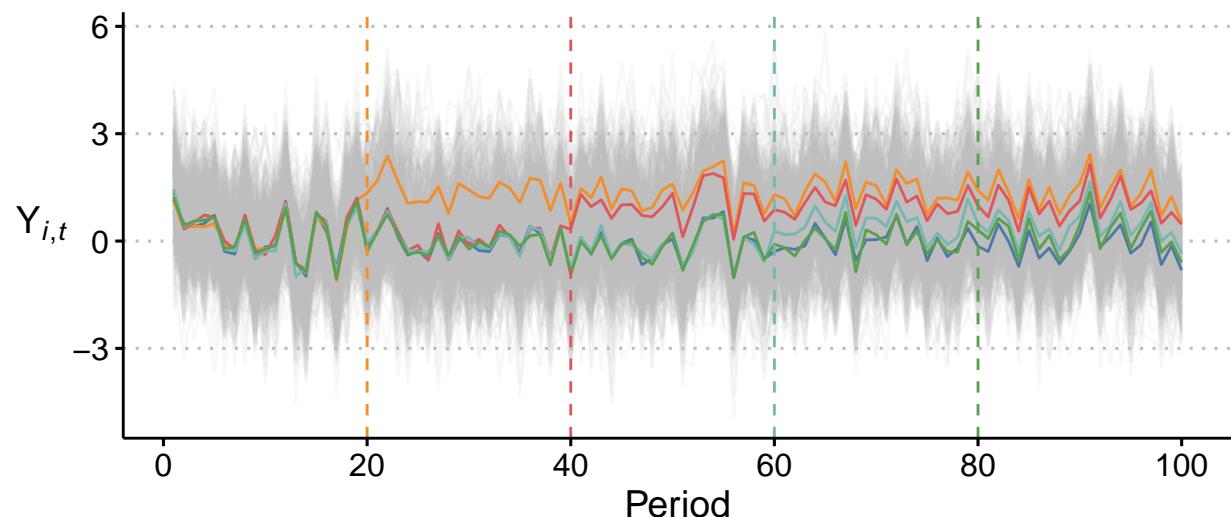
Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	1.000	1.000	1.000	0.000		
2	MC-NNM	0.884	0.998	1.159	0.044	-0.002	0.044
3	TWFE	0.884	0.997	1.115	0.038	-0.003	0.038
4	CS	0.785	1.001	1.211	0.076	0.001	0.076
5	SA	0.785	1.001	1.211	0.076	0.001	0.076
6	dCdH	0.767	1.001	1.292	0.082	0.001	0.082
7	BJS	0.884	0.998	1.159	0.044	-0.002	0.044

DGP 4: Multiple Treatment Groups, Time-Invariant Heterogeneous TE

100 periods

Outcome Data from One Draw of Simulation 4 with 100 Periods

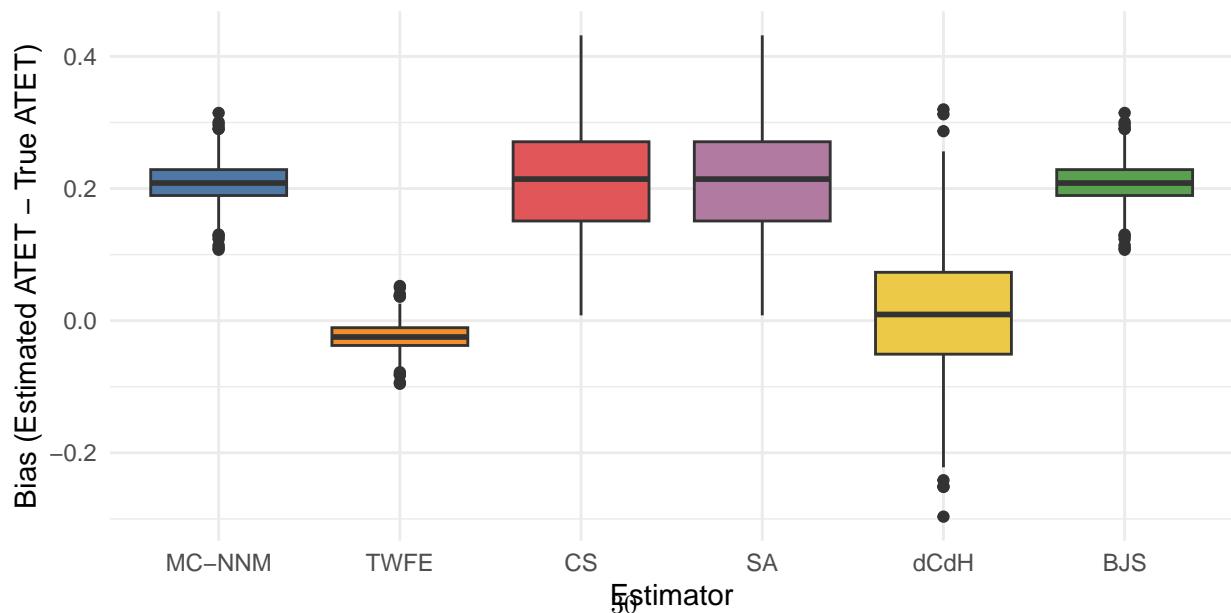


Treatment Groups

— Control — 20 — 40 — 60 — 80

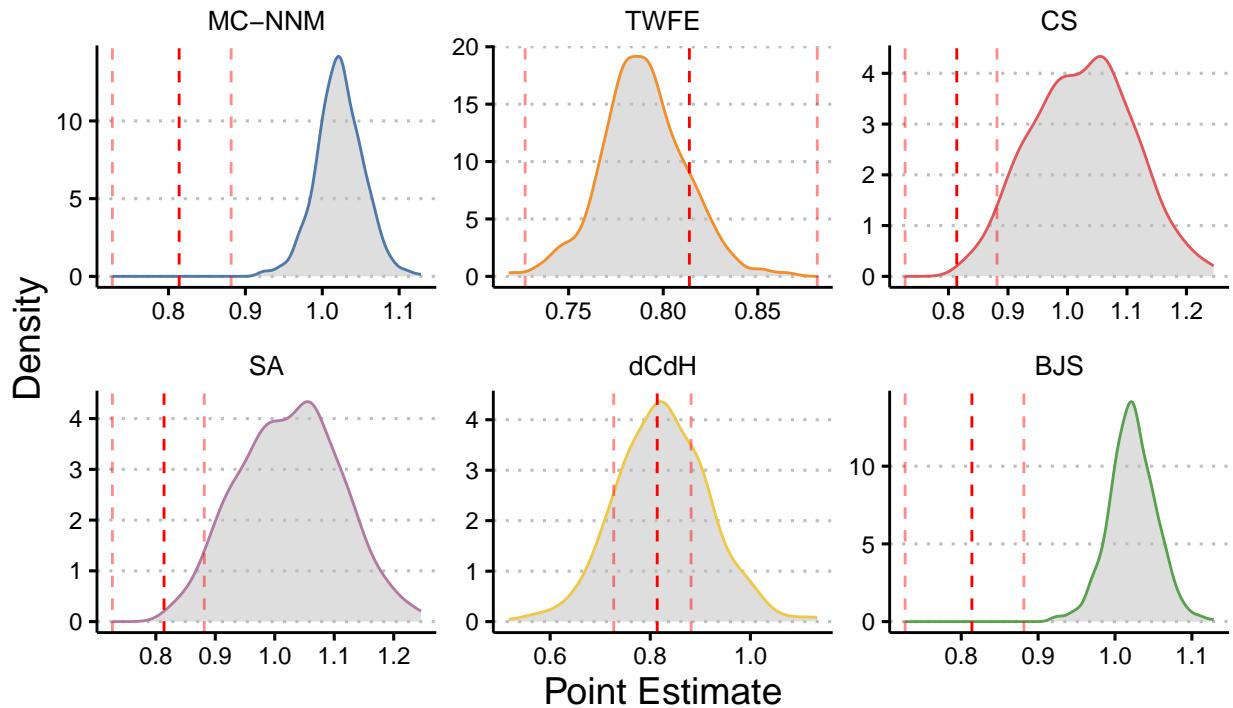
All observations from one draw of the simulation.
Colored lines represent group means for each treatment group.

Deviation from True Treatment Effect, 100 Periods



Estimator MC-NNM CS dCdH
 TWFE SA BJS

Distributions of ATET Estimates, 100 Periods

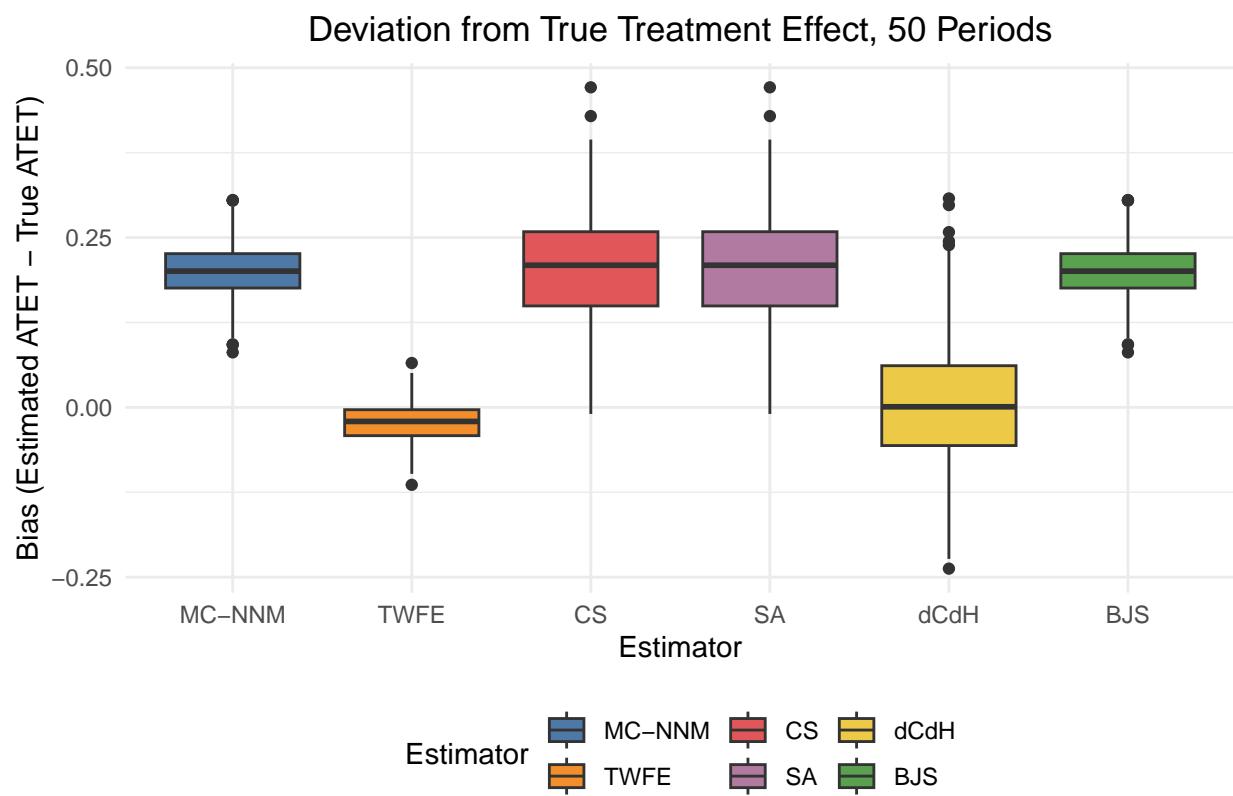
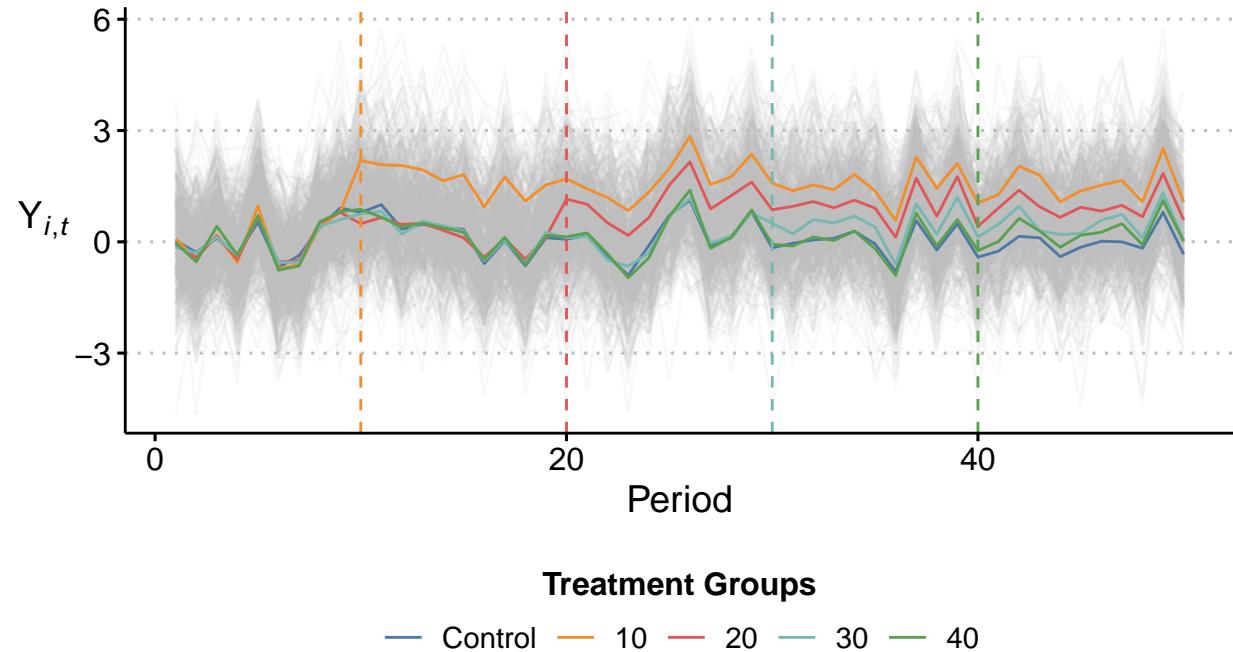


Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

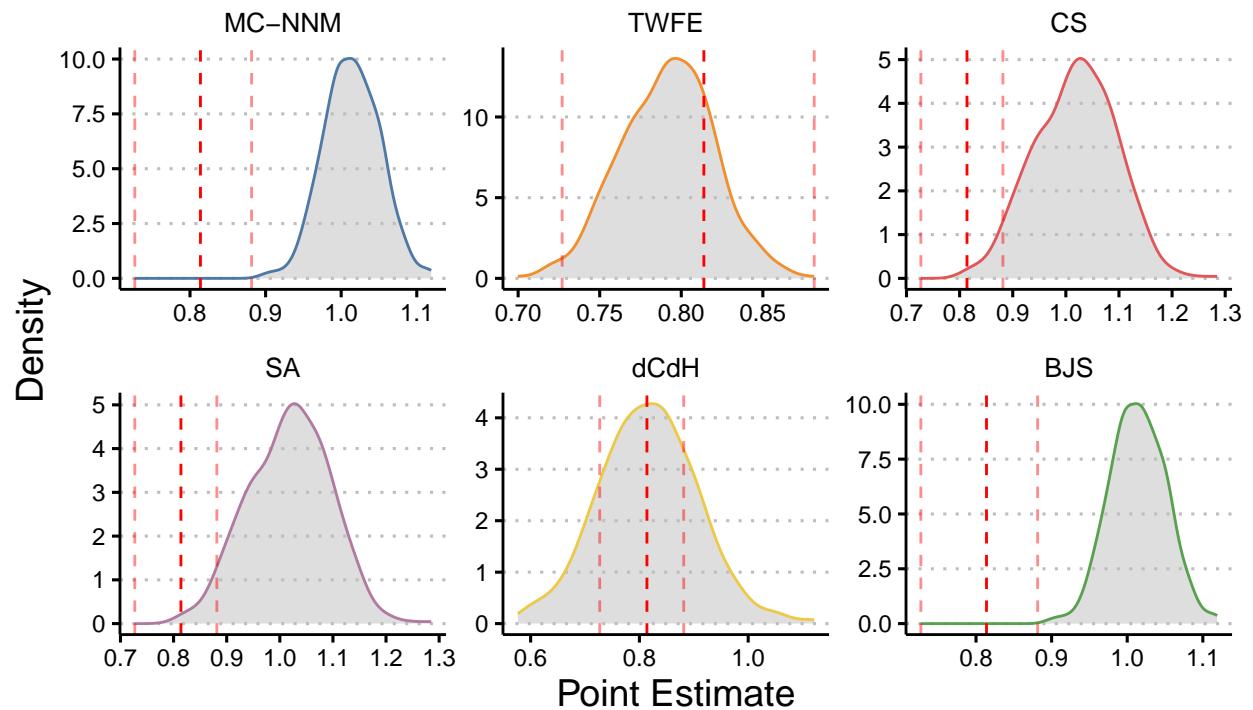
	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	0.727	0.814	0.881	0.024		
2	MC-NNM	0.921	1.023	1.128	0.031	0.209	0.210
3	TWFE	0.718	0.790	0.866	0.022	-0.024	0.032
4	CS	0.822	1.025	1.246	0.085	0.212	0.227
5	SA	0.822	1.025	1.246	0.085	0.212	0.227
6	dCdH	0.517	0.824	1.134	0.093	0.011	0.091
7	BJS	0.921	1.023	1.128	0.031	0.209	0.210

50 periods

Outcome Data from One Draw of Simulation 4 with 50 Periods



Distributions of ATET Estimates, 50 Periods

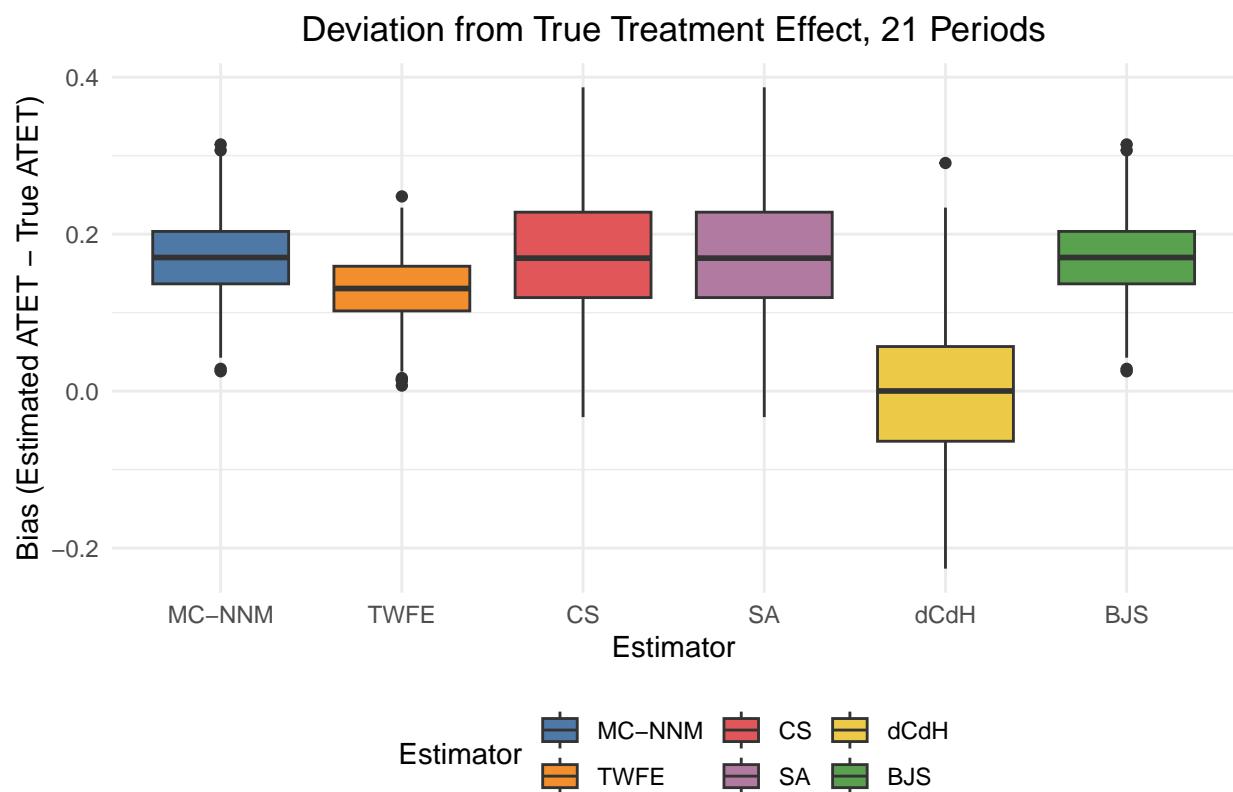
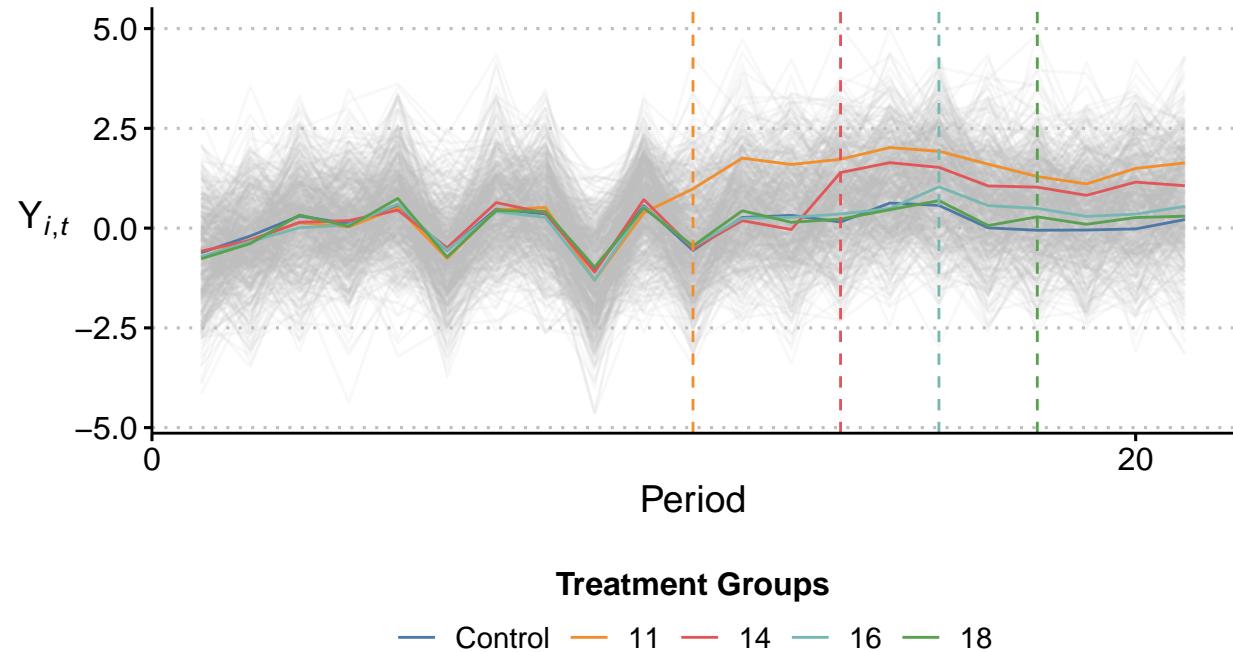


Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

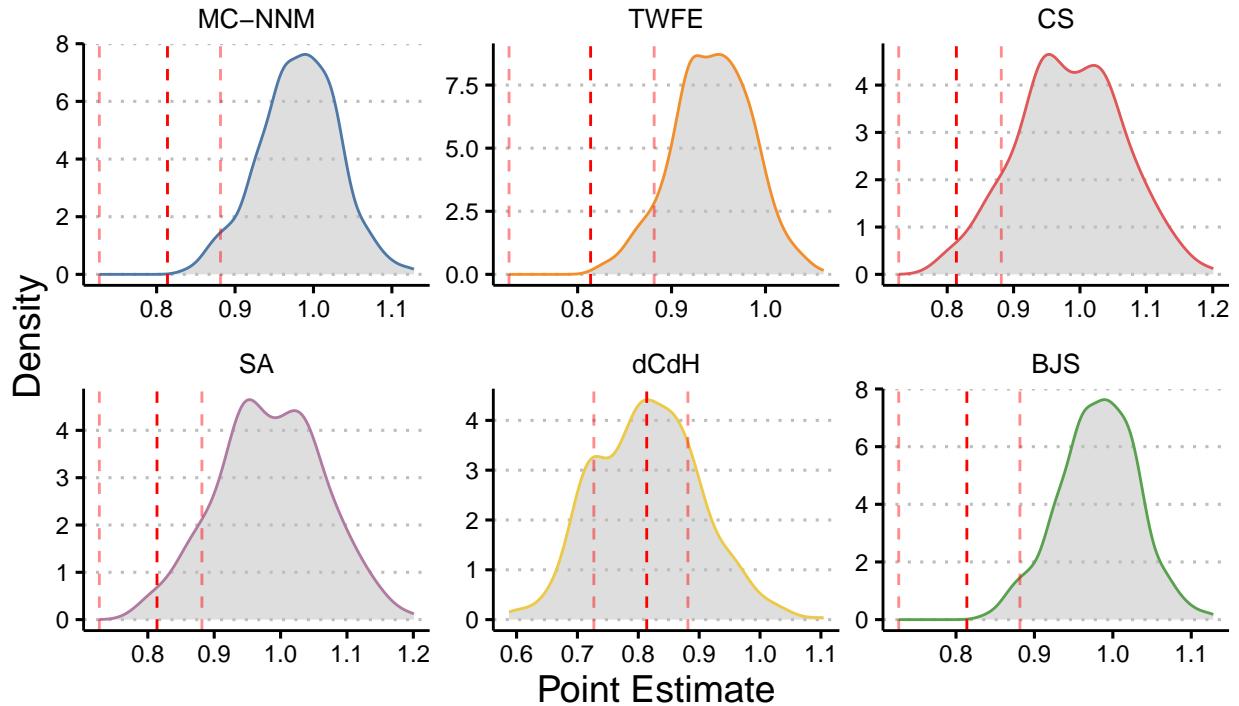
	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	0.727	0.814	0.881	0.024		
2	MC-NNM	0.895	1.014	1.119	0.037	0.200	0.202
3	TWFE	0.700	0.791	0.879	0.029	-0.022	0.035
4	CS	0.804	1.018	1.285	0.077	0.204	0.218
5	SA	0.804	1.018	1.285	0.077	0.204	0.218
6	dCdH	0.576	0.816	1.121	0.091	0.003	0.088
7	BJS	0.895	1.014	1.119	0.037	0.200	0.202

21 periods

Outcome Data from One Draw of Simulation 4 with 21 Periods



Distributions of ATET Estimates, 21 Periods

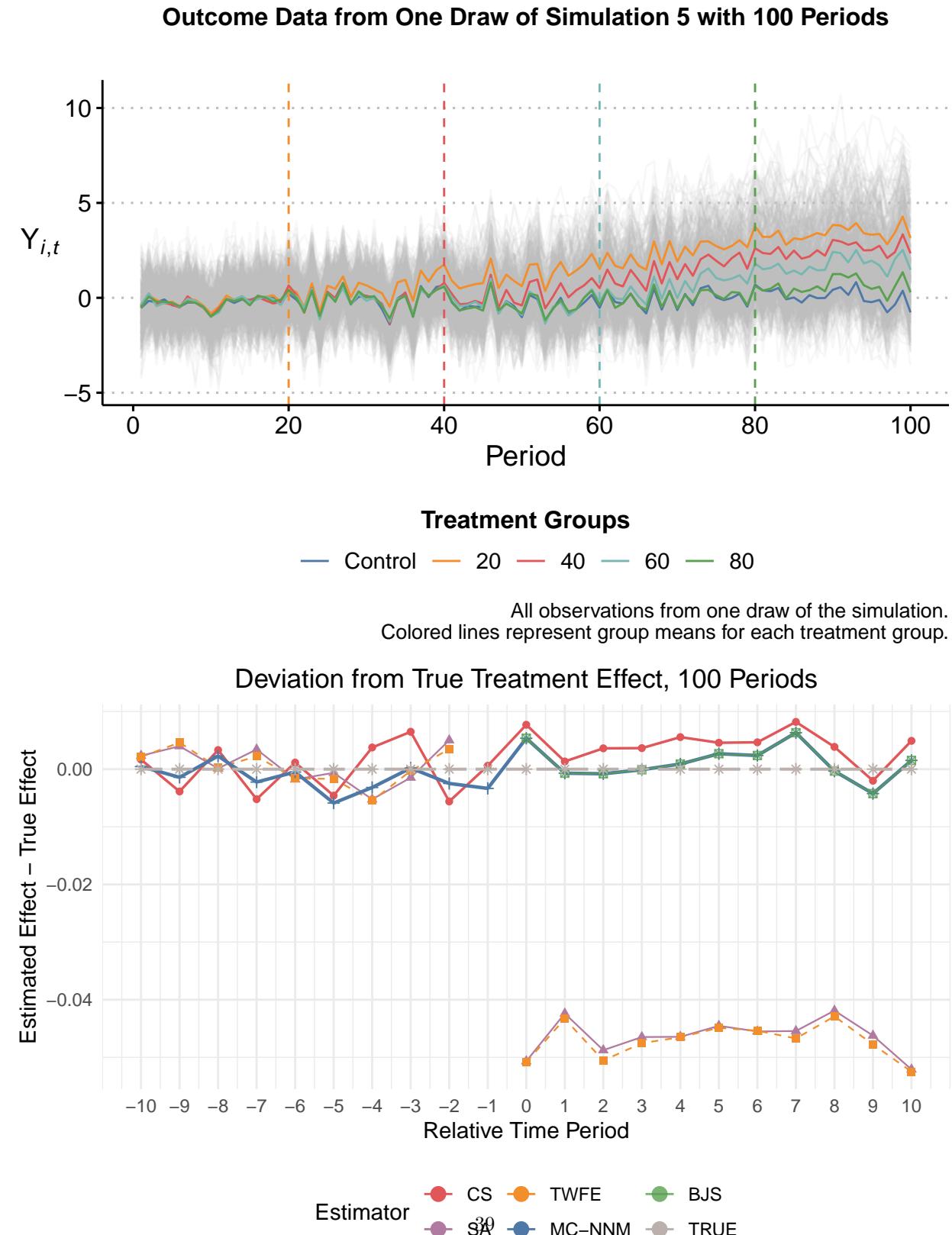


Density of point estimates of the ATET for each estimator. Vertical Red Lines indicate minimum, mean, and maximum of true parameter value, if only one is visible, the true value does not vary.

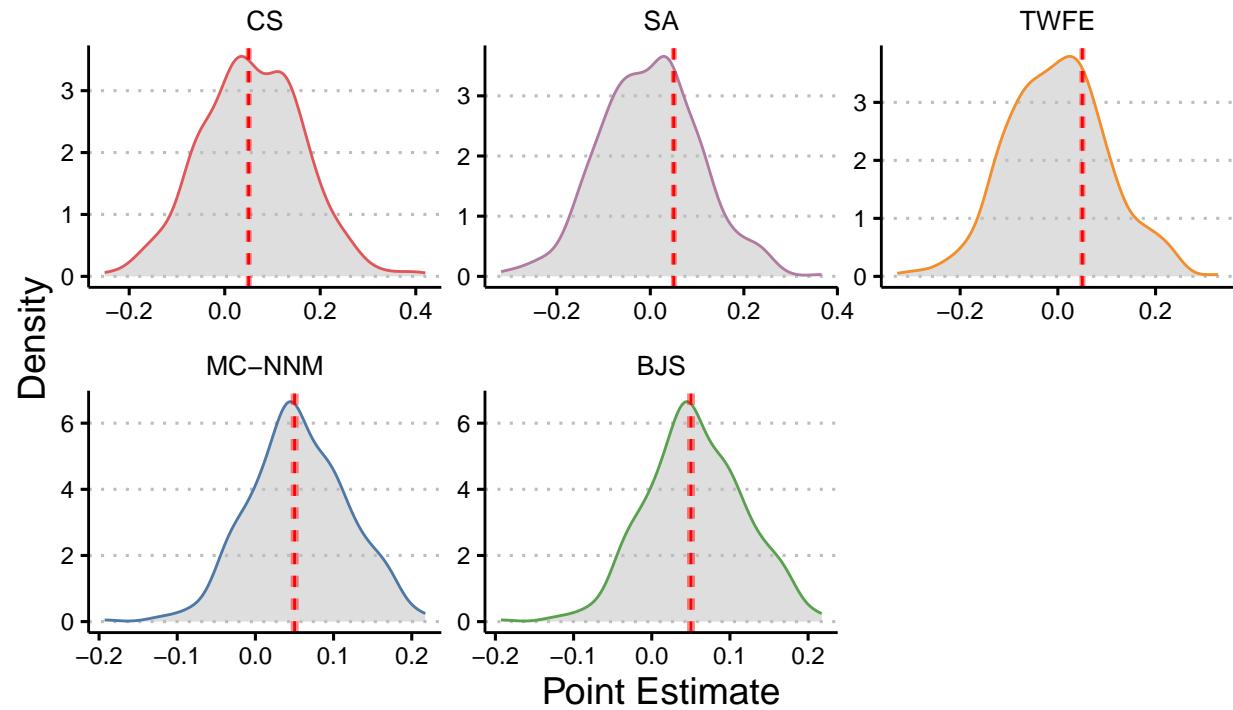
	Estimator	Min	Mean	Max	SD	Bias	RMSE
1	TRUE	0.727	0.814	0.881	0.024		
2	MC-NNM	0.839	0.981	1.128	0.050	0.167	0.173
3	TWFE	0.821	0.943	1.062	0.042	0.129	0.135
4	CS	0.781	0.985	1.201	0.080	0.171	0.187
5	SA	0.781	0.985	1.201	0.080	0.171	0.187
6	dCdH	0.588	0.815	1.104	0.085	0.001	0.082
7	BJS	0.839	0.981	1.128	0.050	0.167	0.173

DGP 5: Multiple Treatment Groups, Time-Varying Homogeneous TE

100 periods



Distributions of Relative Period 0 Effect Estimates, 100 Periods

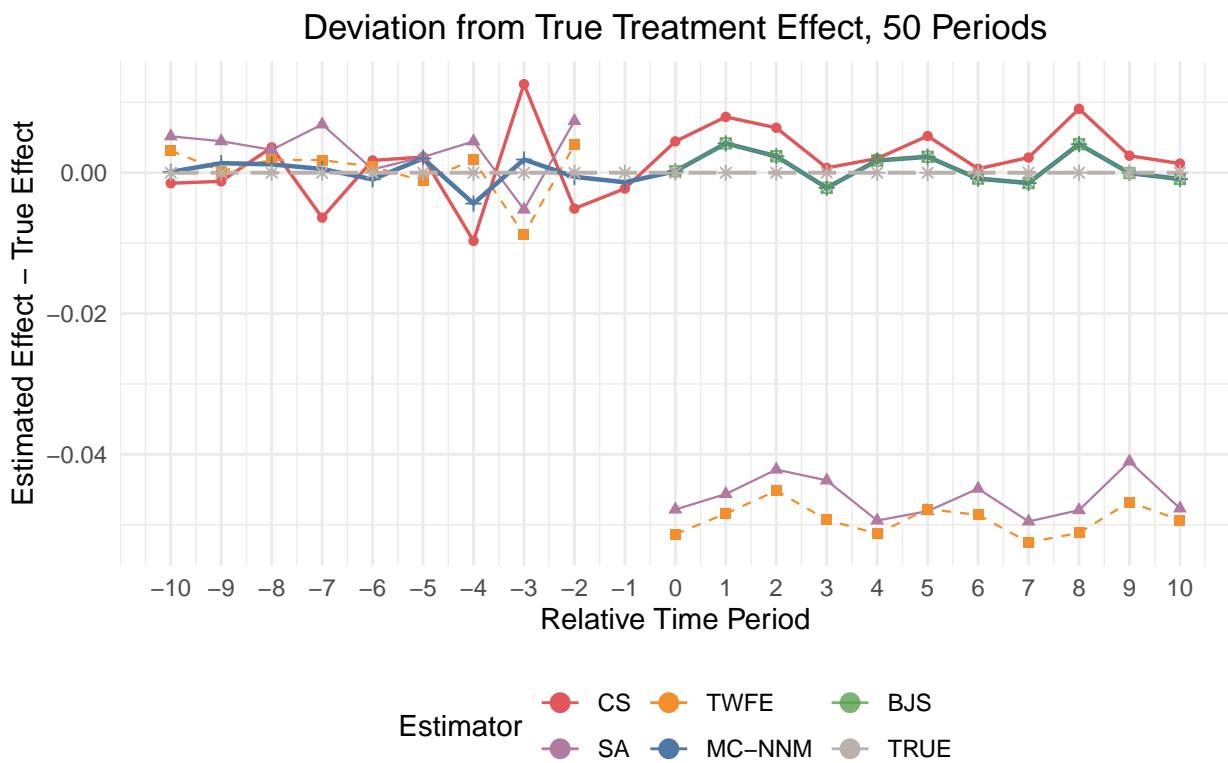
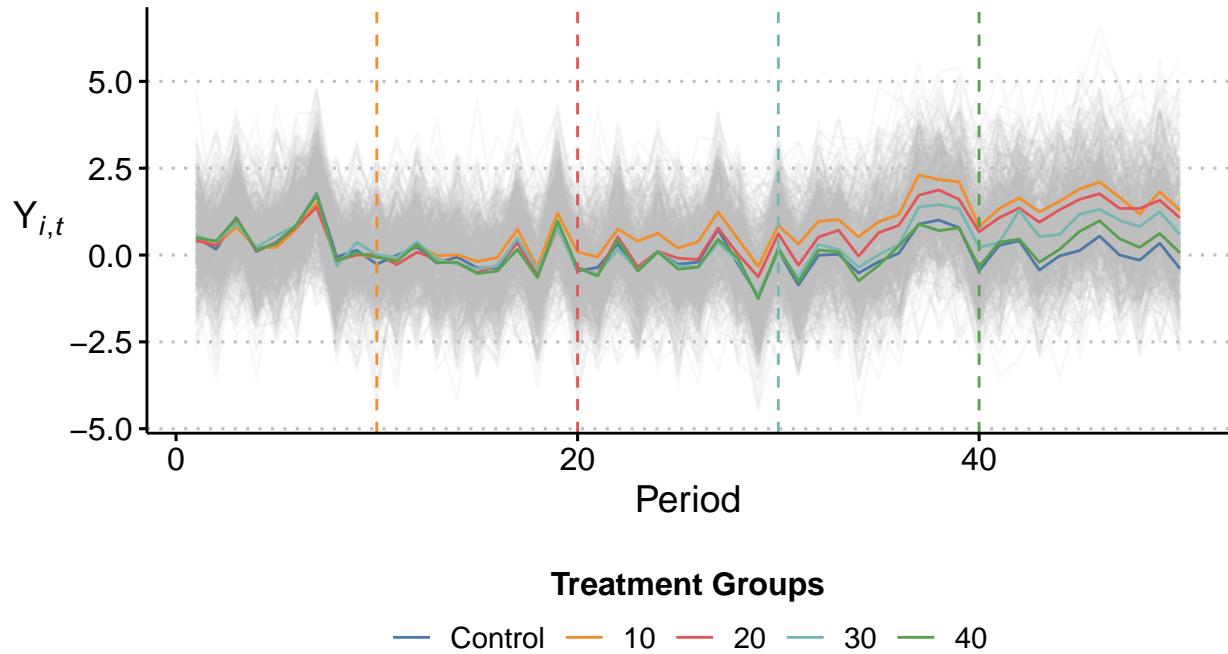


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.047	0.050	0.054	0.001			
2	MC-NNM	-0.193	0.055	0.217	0.063	0.005	0.063	0.001
3	TWFE	-0.329	-0.001	0.328	0.102	-0.051	0.114	-0.039
4	CS	-0.251	0.058	0.420	0.106	0.008	0.106	0.003
5	SA	-0.319	-0.001	0.366	0.106	-0.051	0.117	-0.038
6	BJS	-0.193	0.055	0.217	0.063	0.005	0.063	0.001

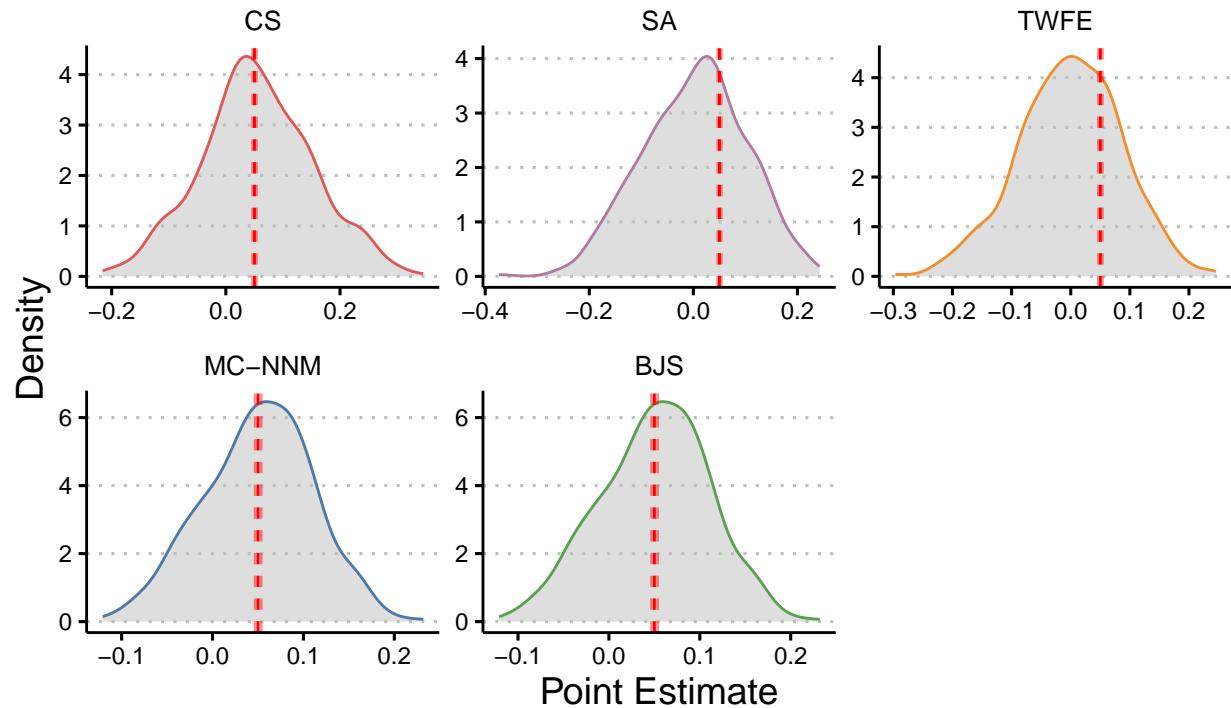
50 periods

Outcome Data from One Draw of Simulation 5 with 50 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 50 Periods

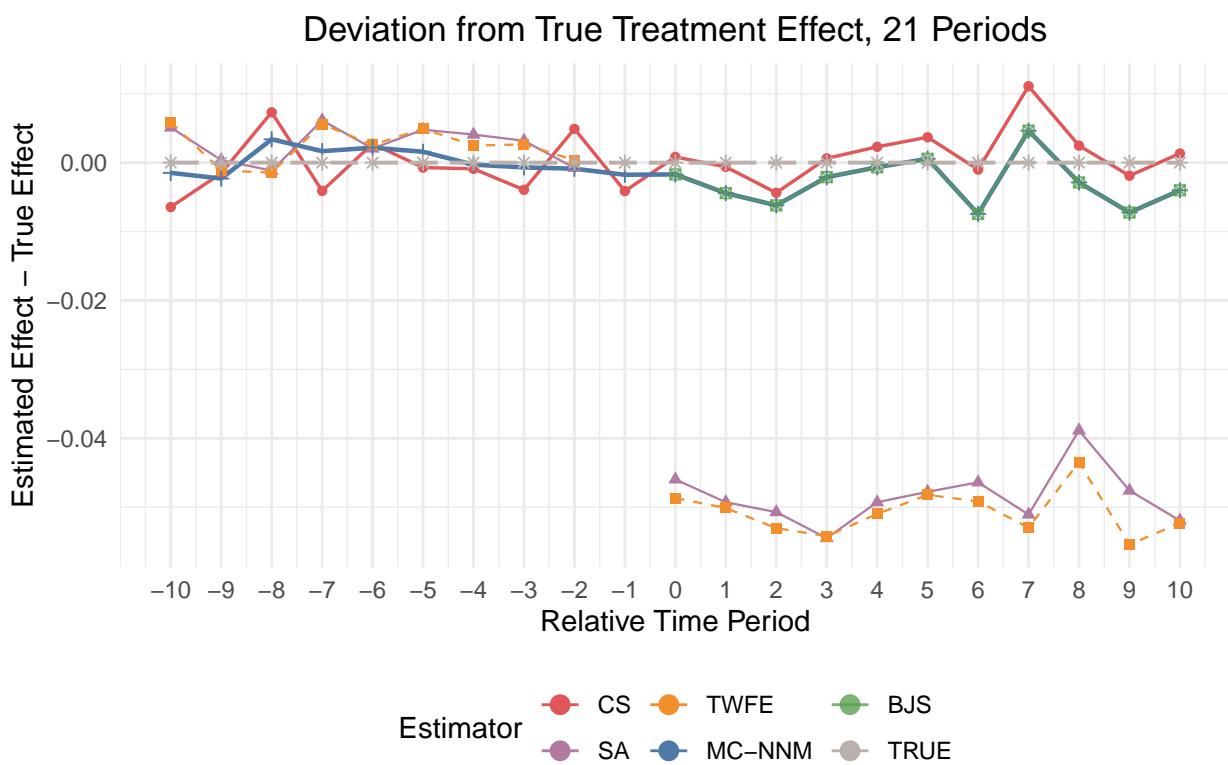
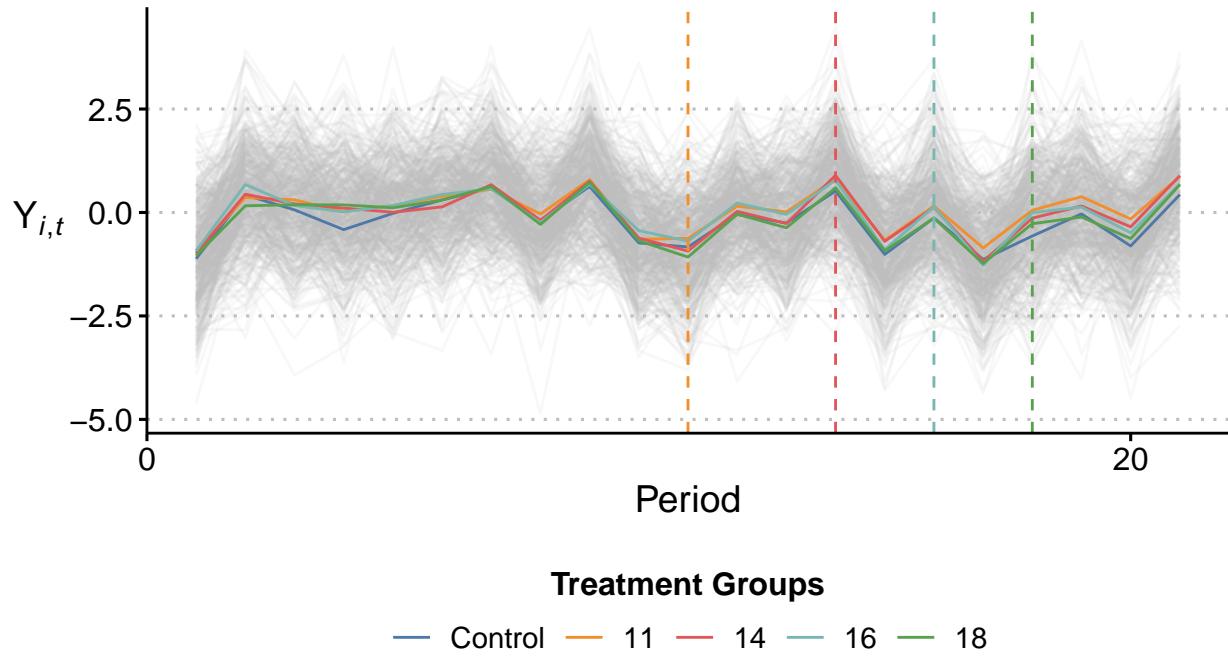


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.047	0.050	0.054	0.001			
2	MC-NNM	-0.121	0.050	0.232	0.060	0.000	0.060	0.001
3	TWFE	-0.297	-0.001	0.246	0.087	-0.051	0.101	-0.040
4	CS	-0.216	0.055	0.346	0.098	0.004	0.098	0.005
5	SA	-0.373	0.002	0.243	0.099	-0.048	0.110	-0.036
6	BJS	-0.121	0.050	0.232	0.060	0.000	0.060	0.001

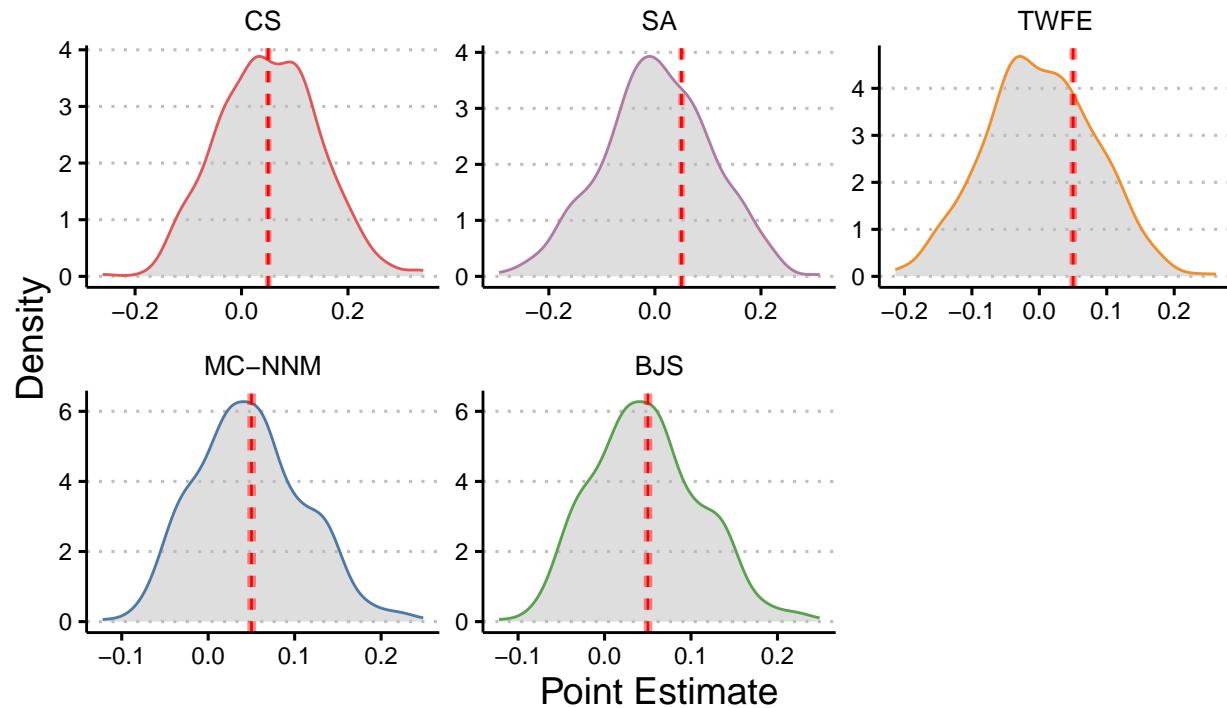
21 periods

Outcome Data from One Draw of Simulation 5 with 21 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods –10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 21 Periods

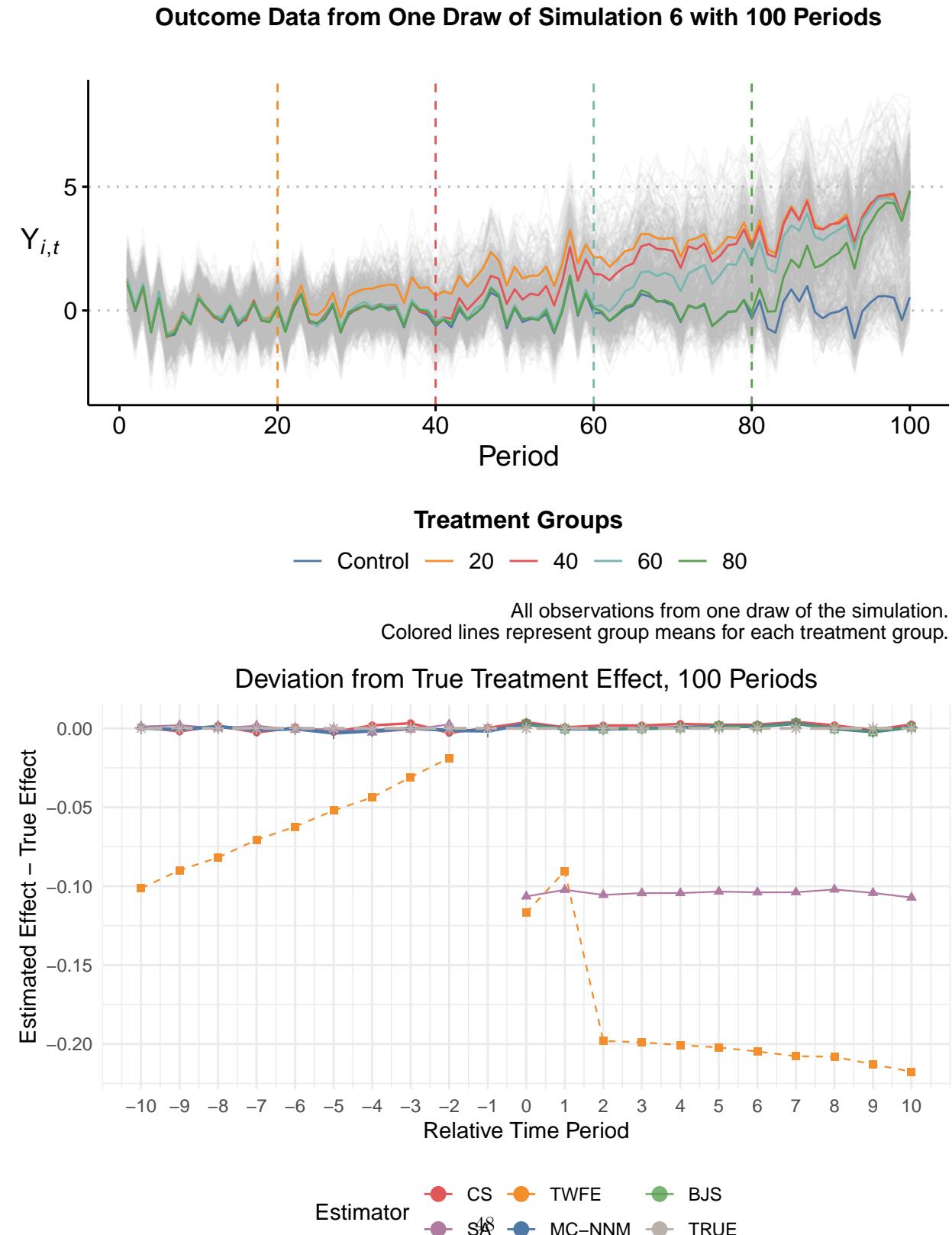


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

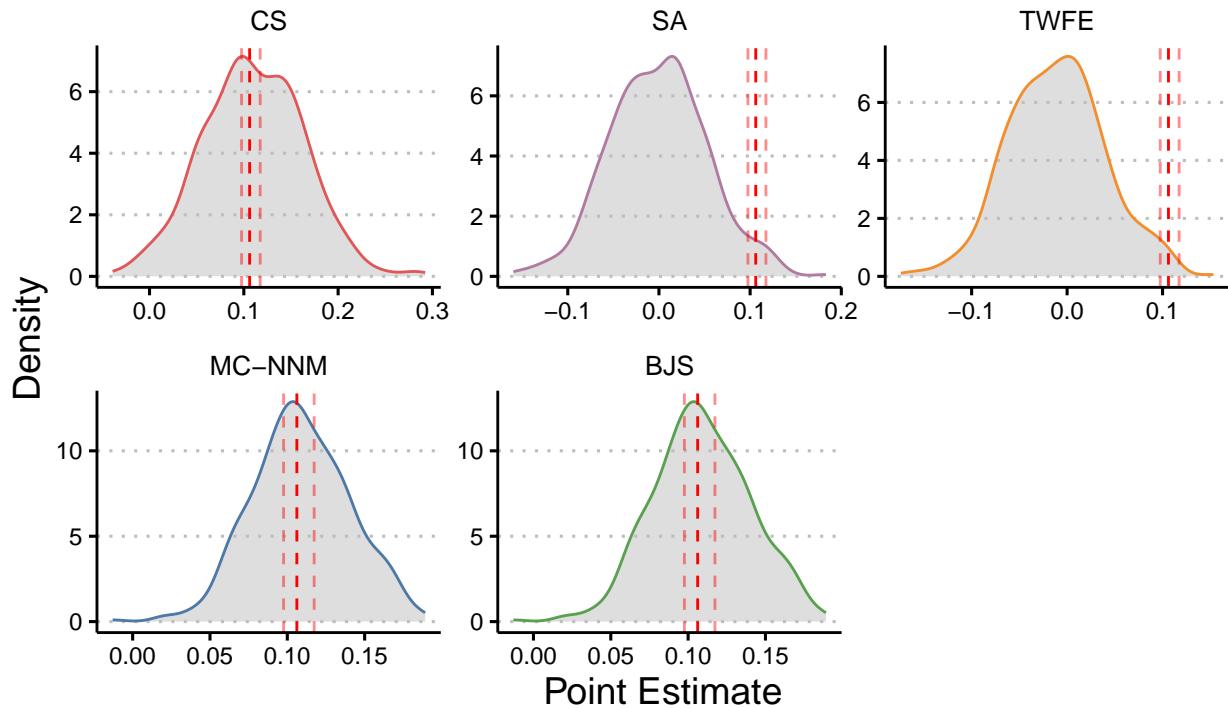
	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.047	0.050	0.054	0.001			
2	MC-NNM	-0.122	0.048	0.249	0.062	-0.002	0.062	-0.001
3	TWFE	-0.214	0.001	0.262	0.081	-0.049	0.094	-0.027
4	CS	-0.261	0.051	0.342	0.094	0.001	0.094	0.000
5	SA	-0.294	0.004	0.311	0.102	-0.046	0.112	-0.025
6	BJS	-0.122	0.048	0.249	0.062	-0.002	0.062	-0.003

DGP 6: Multiple Treatment Groups, Time-Varying Heterogeneous TE

100 periods



Distributions of Relative Period 0 Effect Estimates, 100 Periods

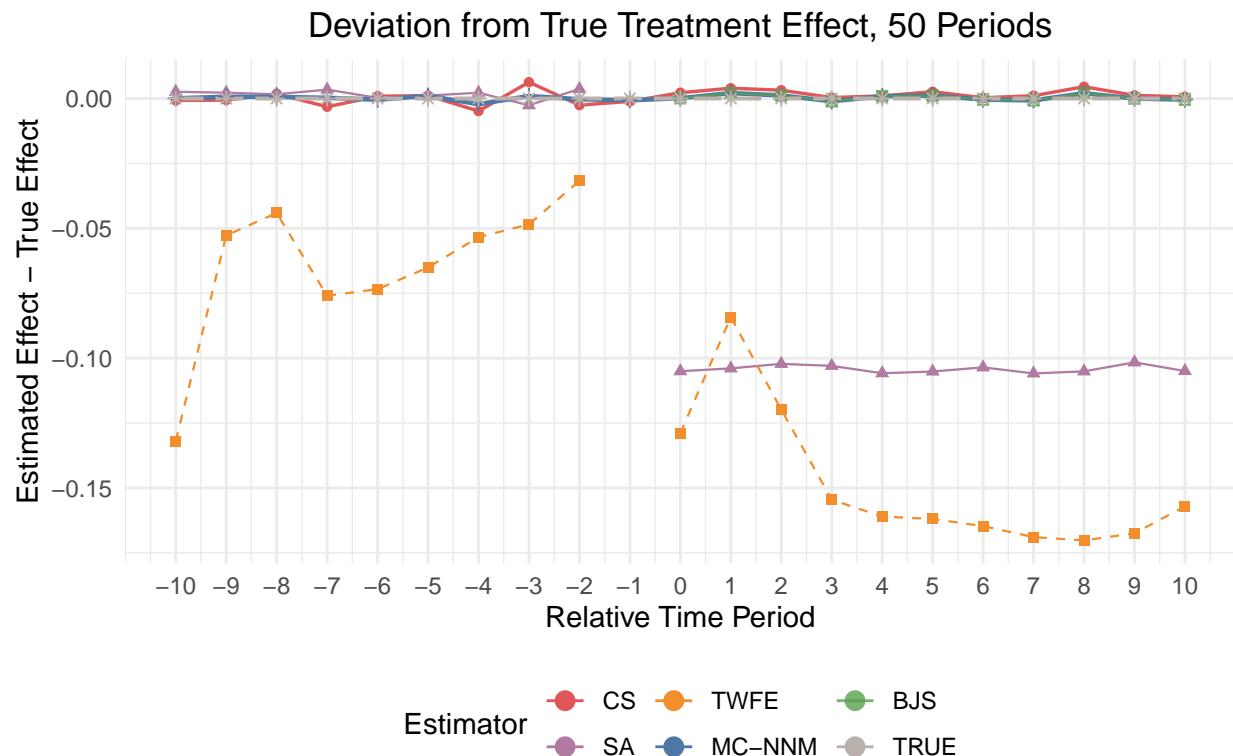
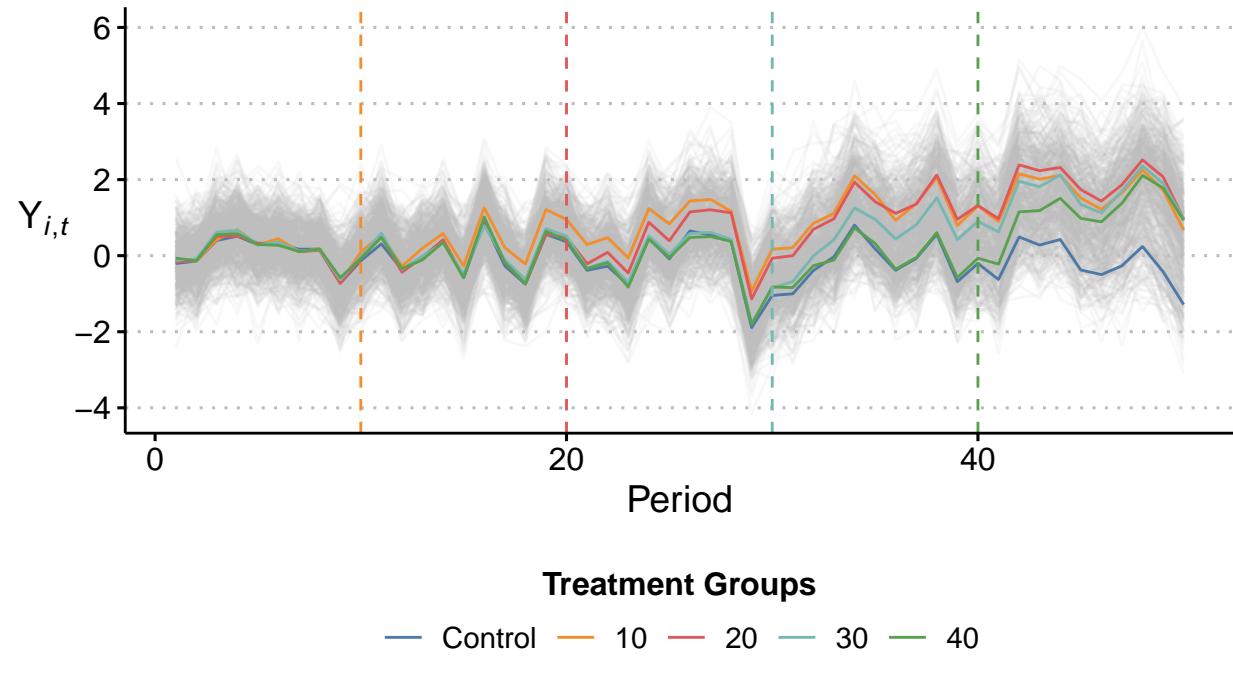


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.098	0.106	0.117	0.003			
2	MC-NNM	-0.013	0.109	0.189	0.031	0.003	0.032	0.000
3	TWFE	-0.174	-0.011	0.153	0.051	-0.117	0.127	-0.037
4	CS	-0.039	0.110	0.292	0.053	0.004	0.053	0.001
5	SA	-0.160	-0.000	0.183	0.053	-0.106	0.119	-0.039
6	BJS	-0.013	0.109	0.189	0.031	0.003	0.032	0.000

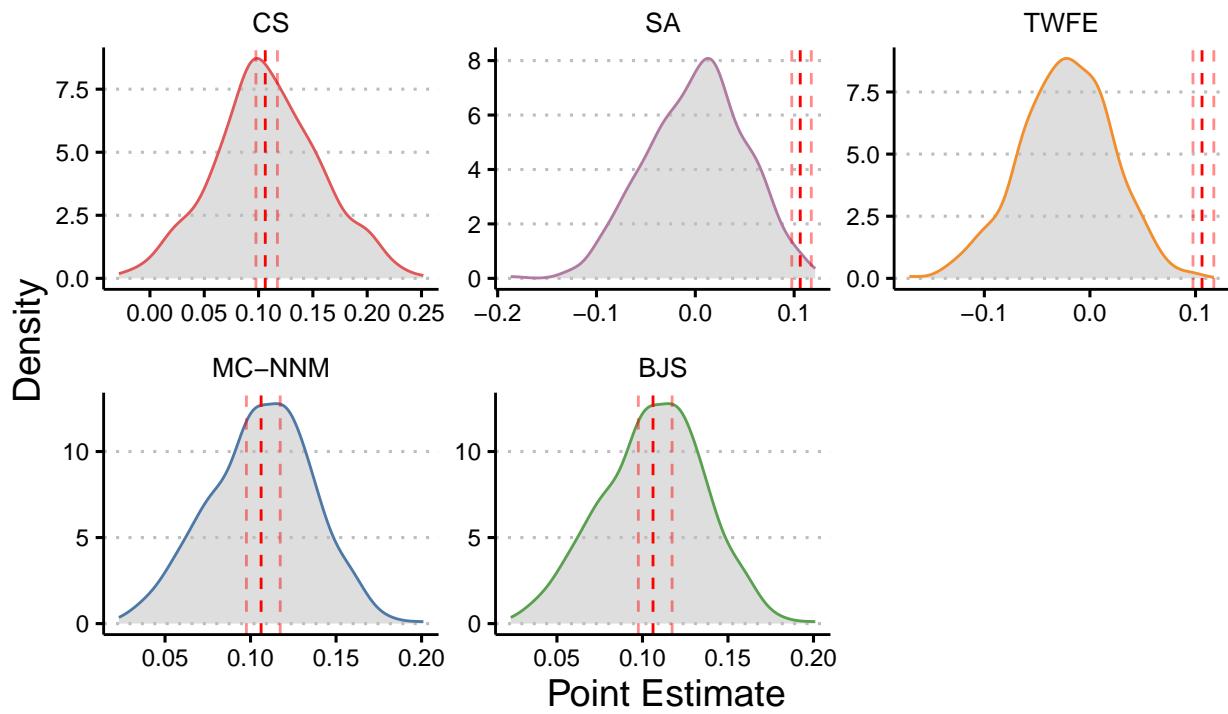
50 periods

Outcome Data from One Draw of Simulation 6 with 50 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 50 Periods

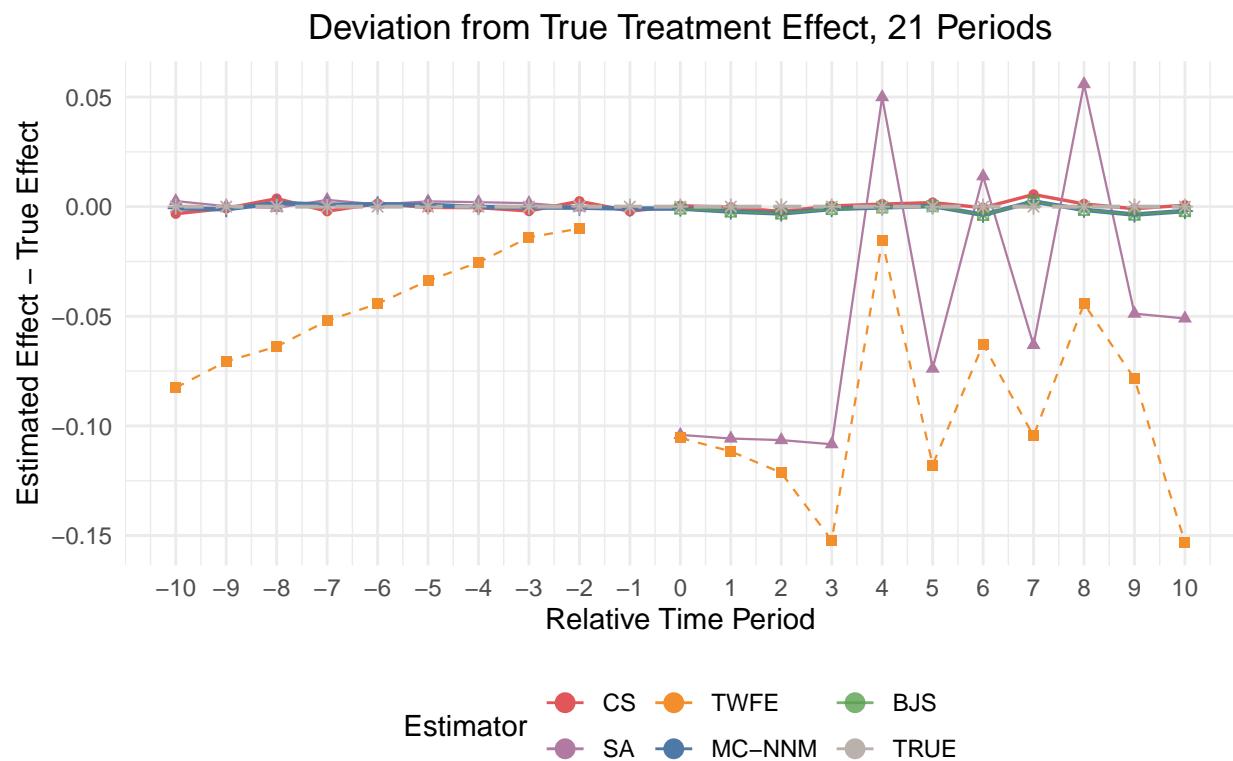
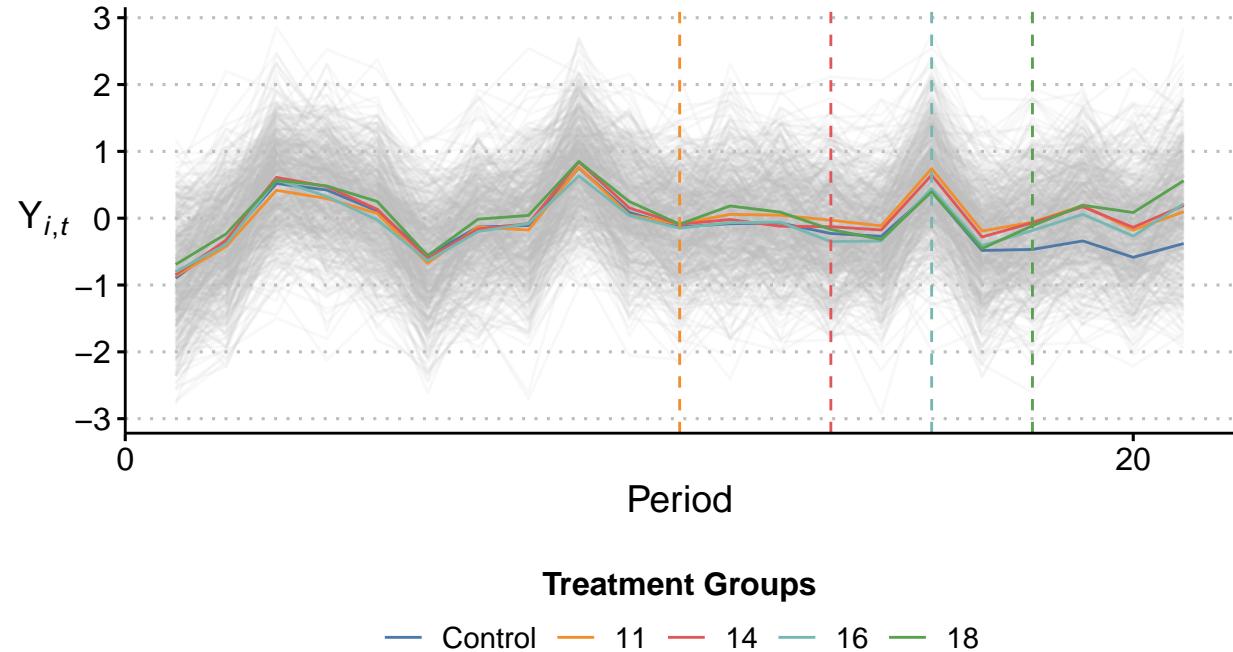


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.098	0.106	0.117	0.003			
2	MC-NNM	0.023	0.106	0.201	0.030	0.000	0.030	0.000
3	TWFE	-0.171	-0.023	0.102	0.044	-0.129	0.136	-0.044
4	CS	-0.029	0.108	0.252	0.049	0.002	0.049	0.002
5	SA	-0.187	0.001	0.121	0.050	-0.105	0.116	-0.038
6	BJS	0.023	0.106	0.201	0.030	0.000	0.030	0.001

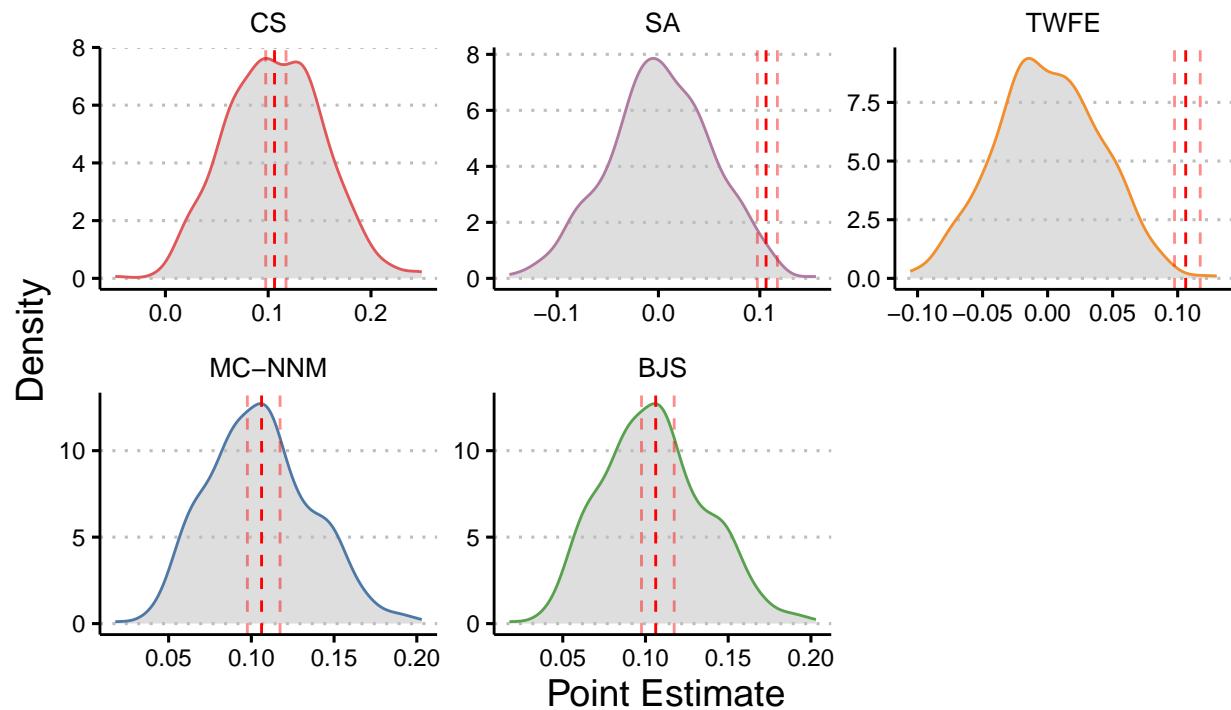
21 periods

Outcome Data from One Draw of Simulation 6 with 21 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 21 Periods

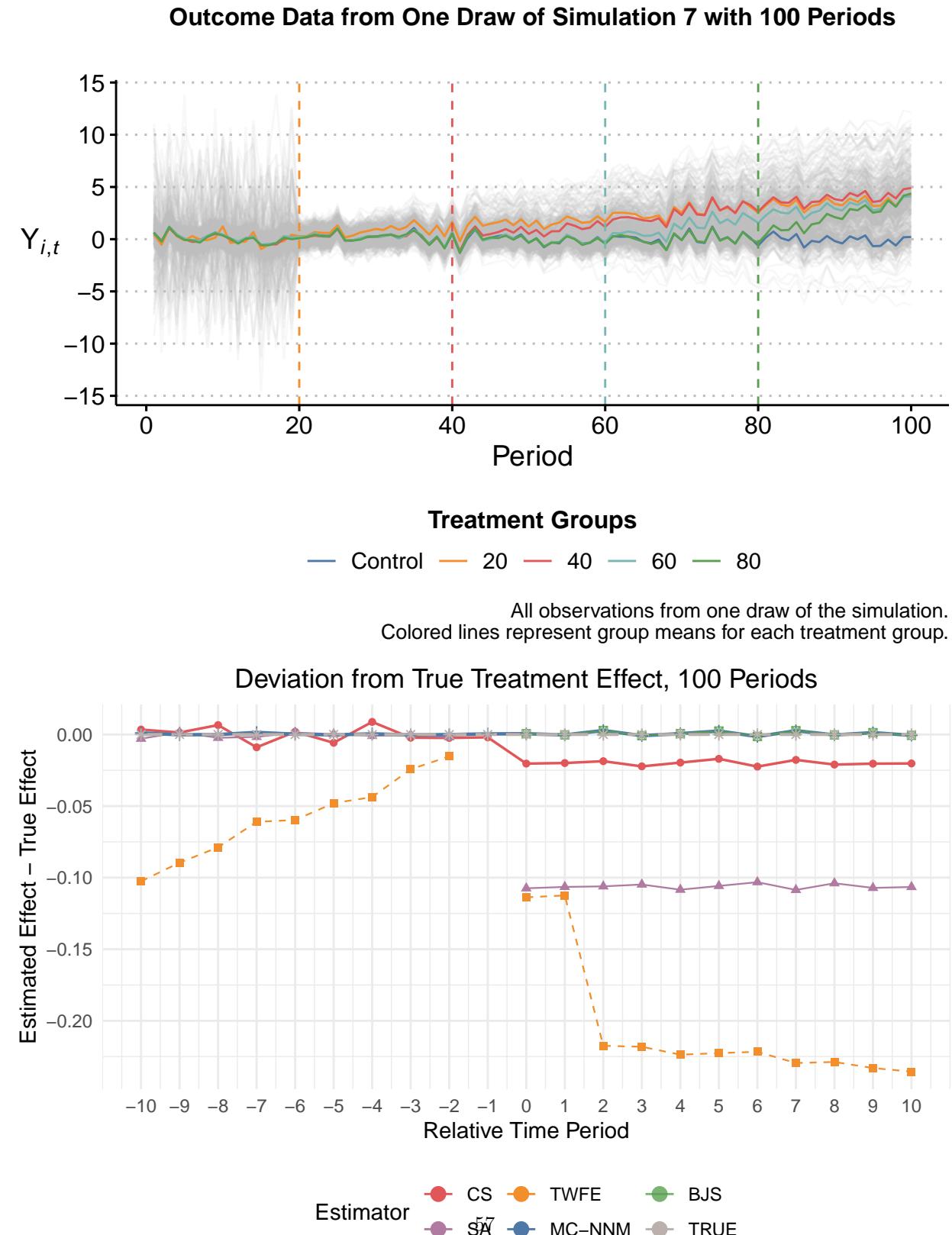


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

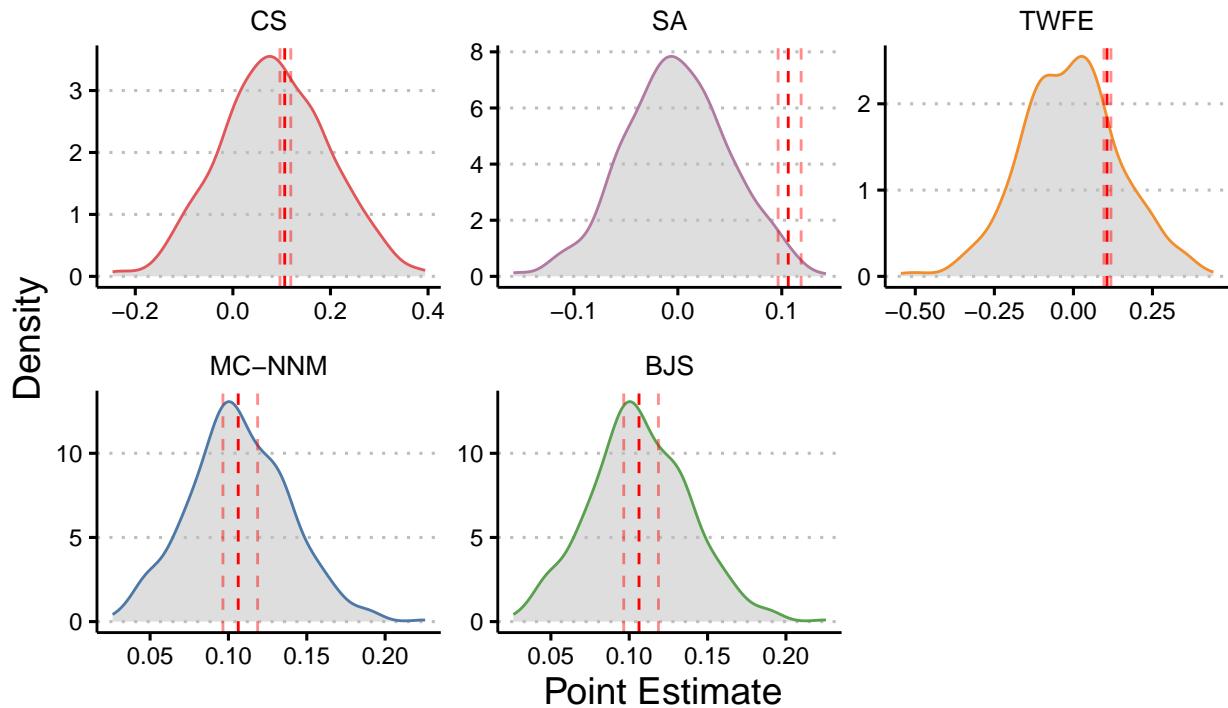
	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.098	0.106	0.117	0.003			
2	MC-NNM	0.018	0.105	0.203	0.031	-0.001	0.031	-0.001
3	TWFE	-0.106	0.001	0.130	0.040	-0.106	0.113	-0.073
4	CS	-0.049	0.107	0.249	0.047	0.000	0.047	0.000
5	SA	-0.147	0.002	0.155	0.051	-0.104	0.116	-0.026
6	BJS	0.018	0.105	0.203	0.031	-0.001	0.031	-0.001

DGP 7: Multiple Treatment Groups, Time-Varying Heterogeneous TE, Unconditional Parallel Trends Violated

100 periods



Distributions of Relative Period 0 Effect Estimates, 100 Periods

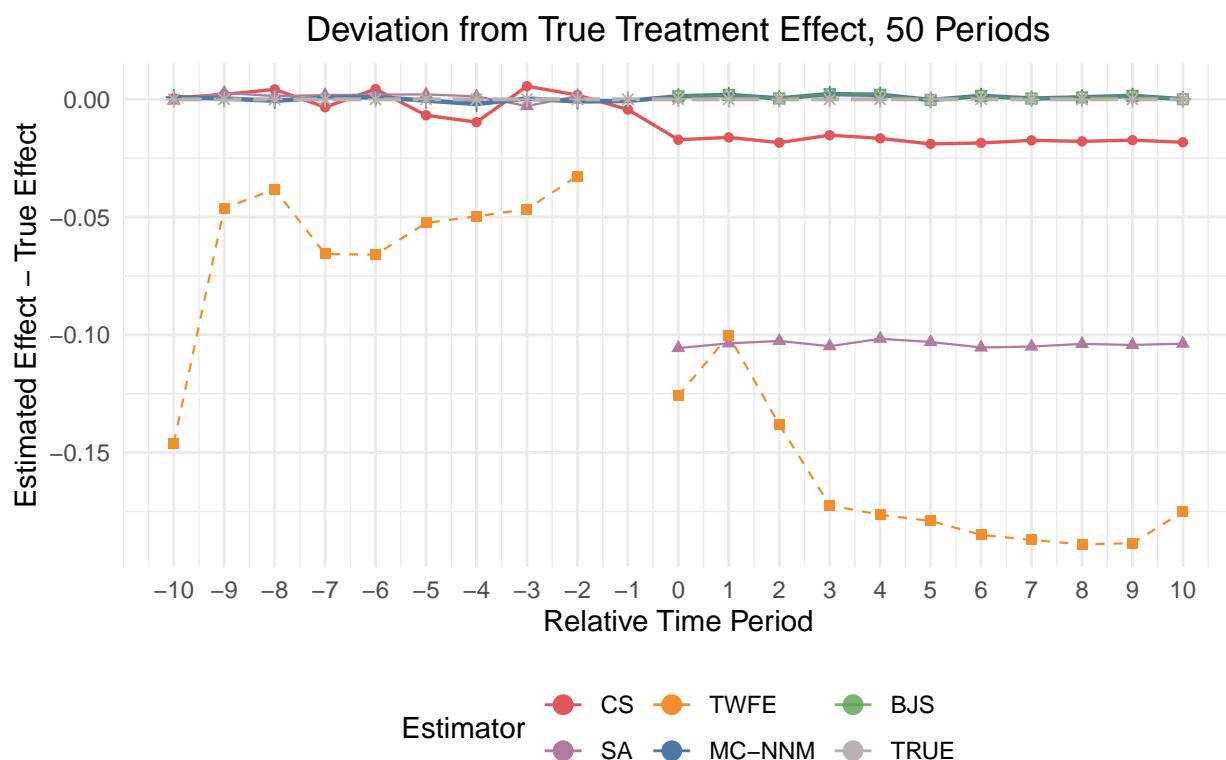
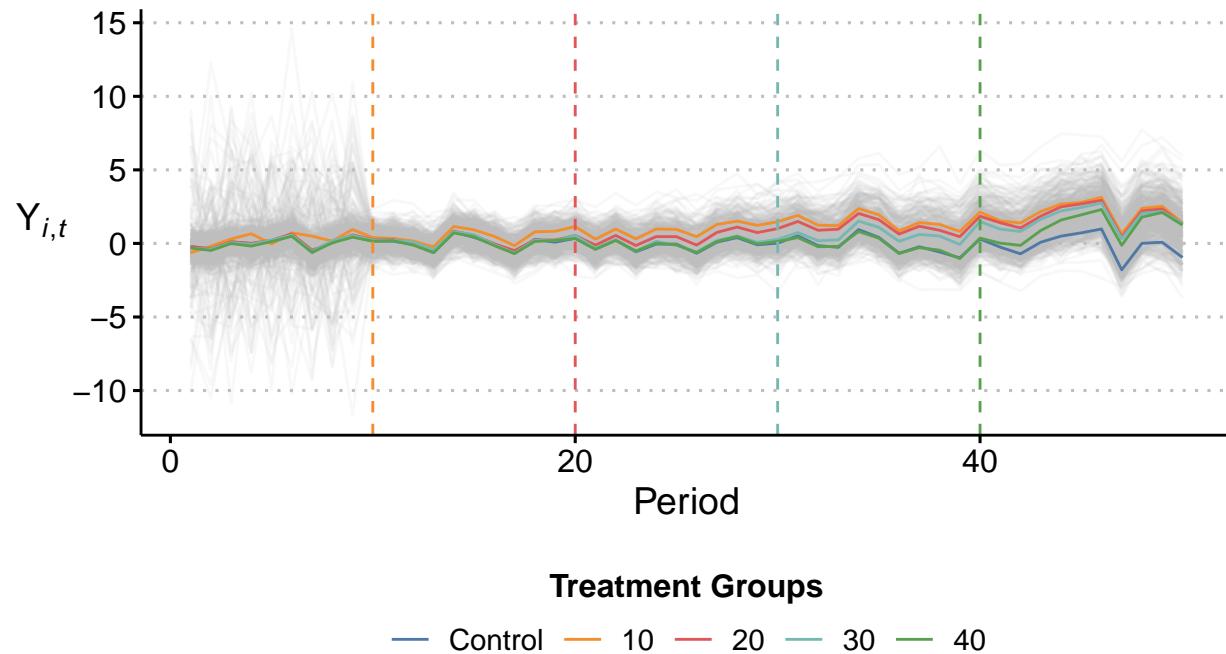


Density of point estimates of the treatment effect in relative period 0 for each estimator.
 Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.097	0.106	0.119	0.004			
2	MC-NNM	0.026	0.107	0.226	0.032	0.001	0.032	0.000
3	TWFE	-0.546	-0.008	0.443	0.157	-0.114	0.193	-0.062
4	CS	-0.247	0.086	0.394	0.110	-0.020	0.112	-0.034
5	SA	-0.158	-0.001	0.143	0.050	-0.107	0.119	-0.041
6	BJS	0.026	0.107	0.226	0.032	0.001	0.032	0.000

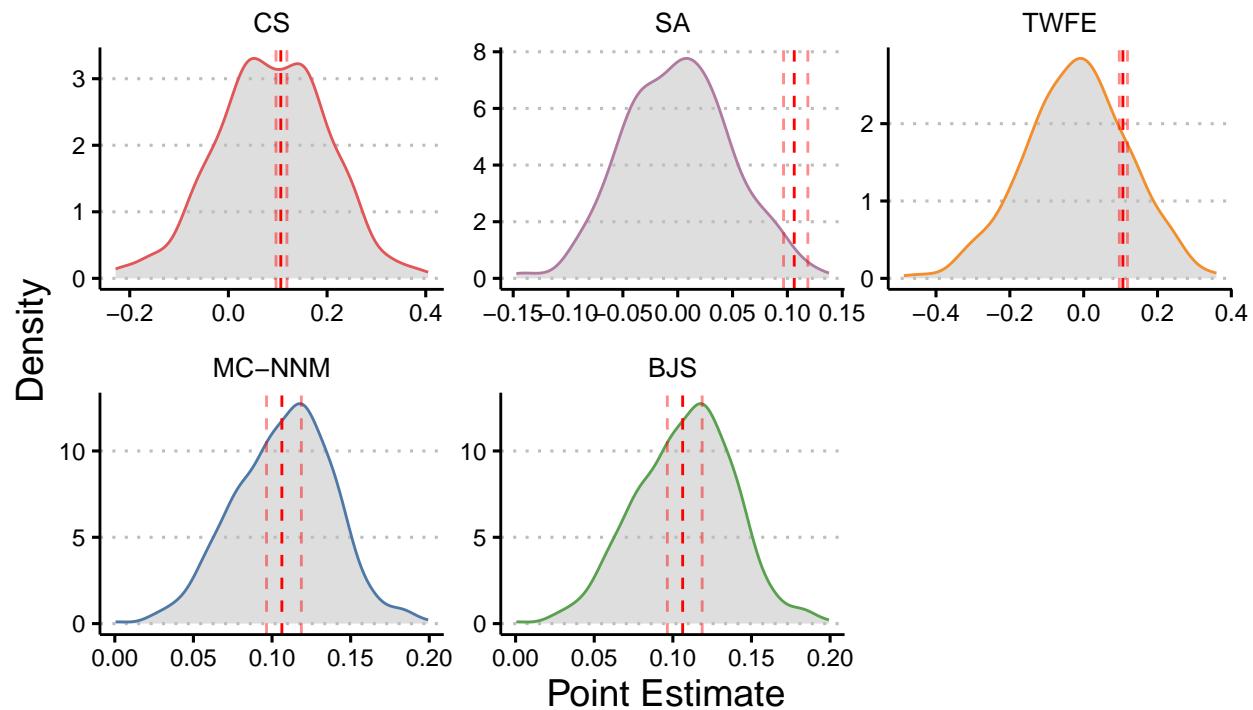
50 periods

Outcome Data from One Draw of Simulation 7 with 50 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 50 Periods

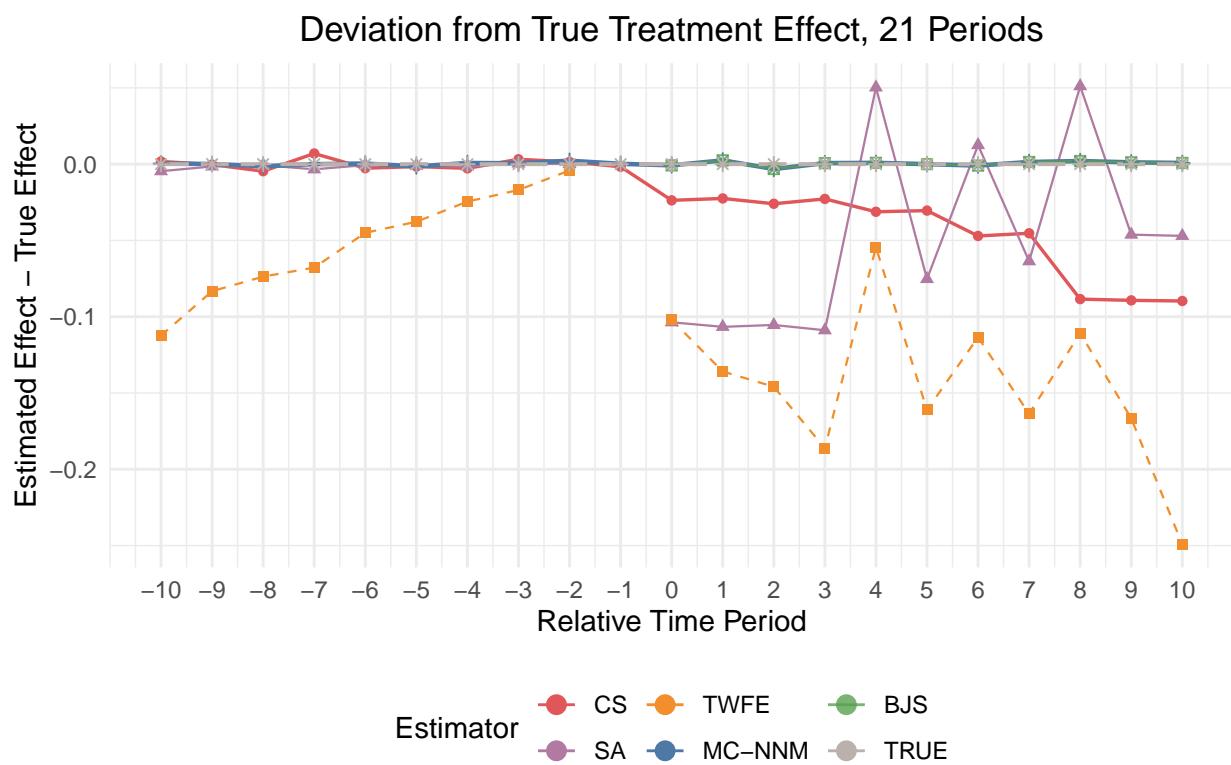
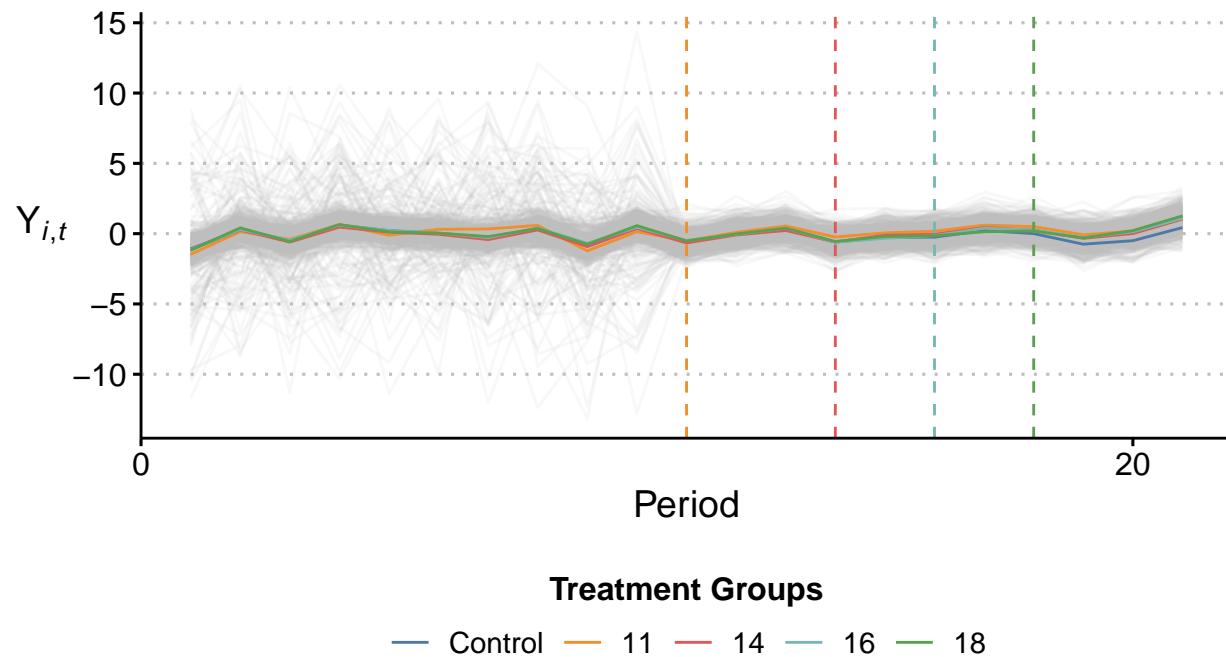


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.097	0.106	0.119	0.004			
2	MC-NNM	0.001	0.108	0.199	0.031	0.001	0.031	0.002
3	TWFE	-0.487	-0.020	0.360	0.141	-0.126	0.188	-0.067
4	CS	-0.229	0.089	0.405	0.112	-0.017	0.112	-0.028
5	SA	-0.147	0.001	0.138	0.049	-0.106	0.116	-0.037
6	BJS	0.001	0.108	0.199	0.031	0.001	0.031	0.002

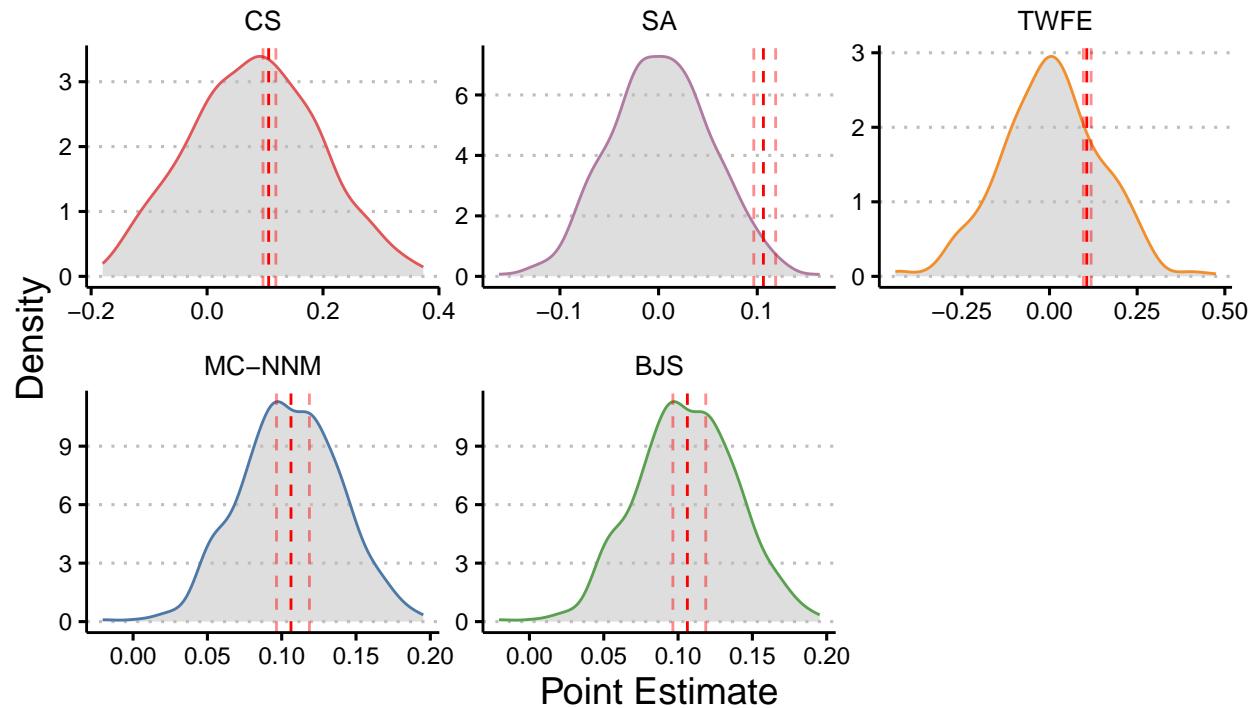
21 periods

Outcome Data from One Draw of Simulation 7 with 21 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 21 Periods

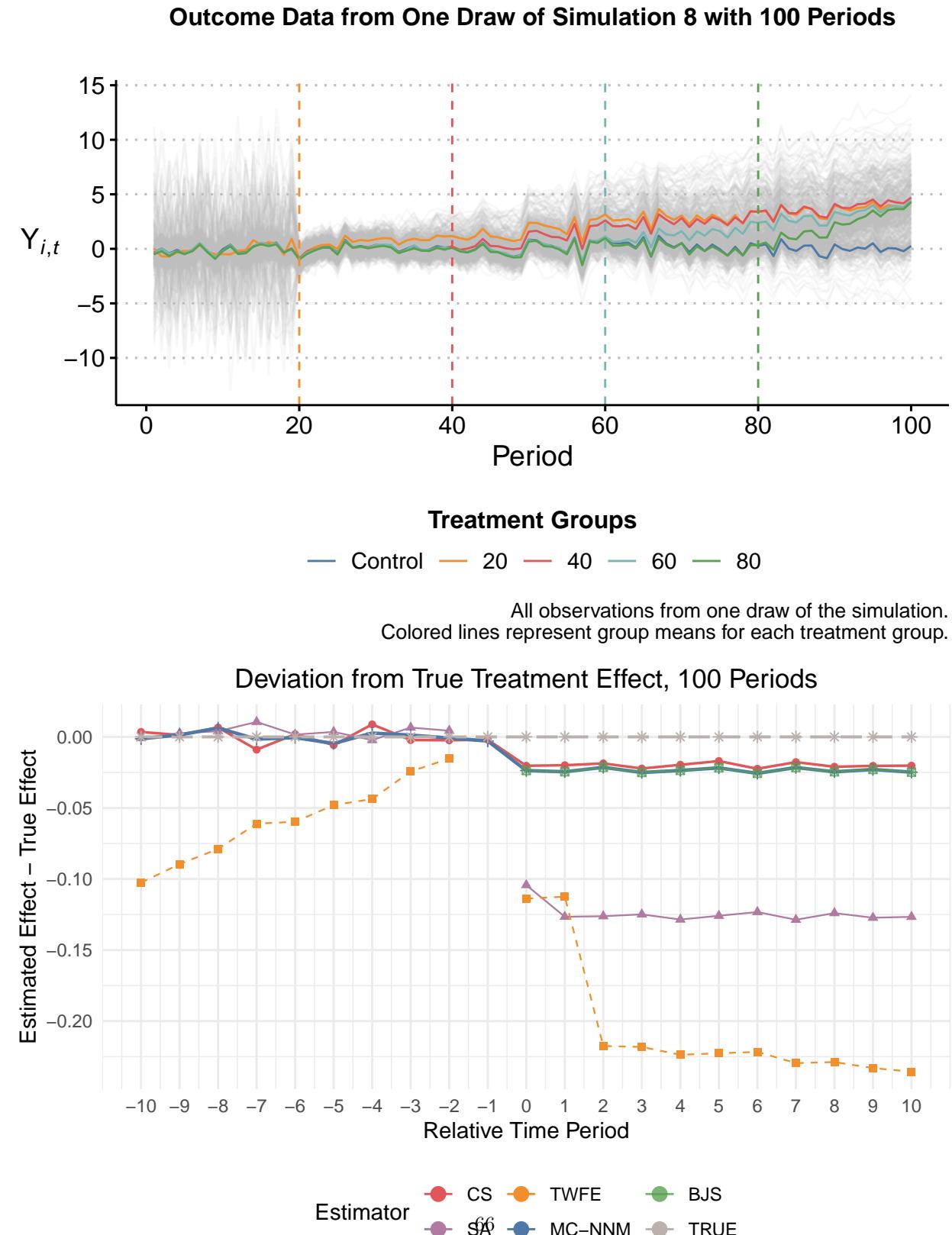


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.097	0.106	0.119	0.004			
2	MC-NNM	-0.020	0.105	0.195	0.033	-0.001	0.033	0.000
3	TWFE	-0.440	0.004	0.475	0.142	-0.102	0.175	-0.103
4	CS	-0.180	0.083	0.373	0.110	-0.024	0.112	-0.025
5	SA	-0.162	0.003	0.163	0.051	-0.104	0.116	-0.028
6	BJS	-0.020	0.105	0.195	0.033	-0.001	0.033	0.000

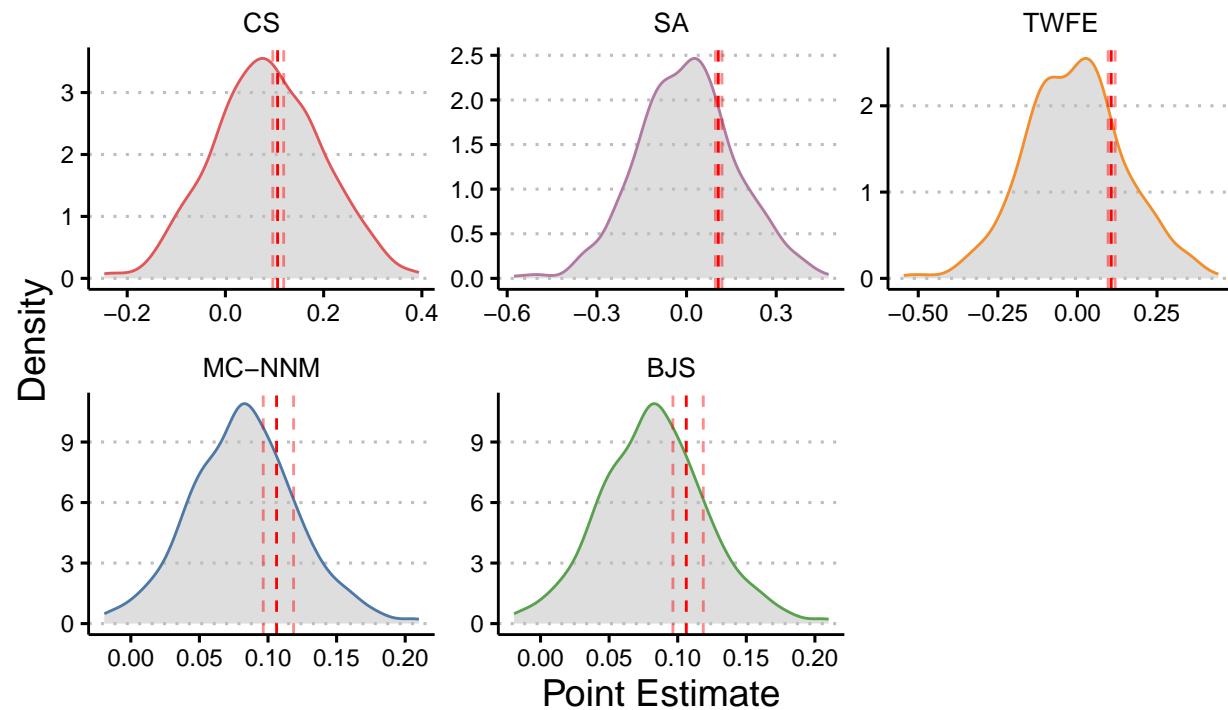
DGP 8: Multiple Treatment Groups, Time-Varying Heterogeneous TE, Parallel Trends Violated

100 periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 100 Periods

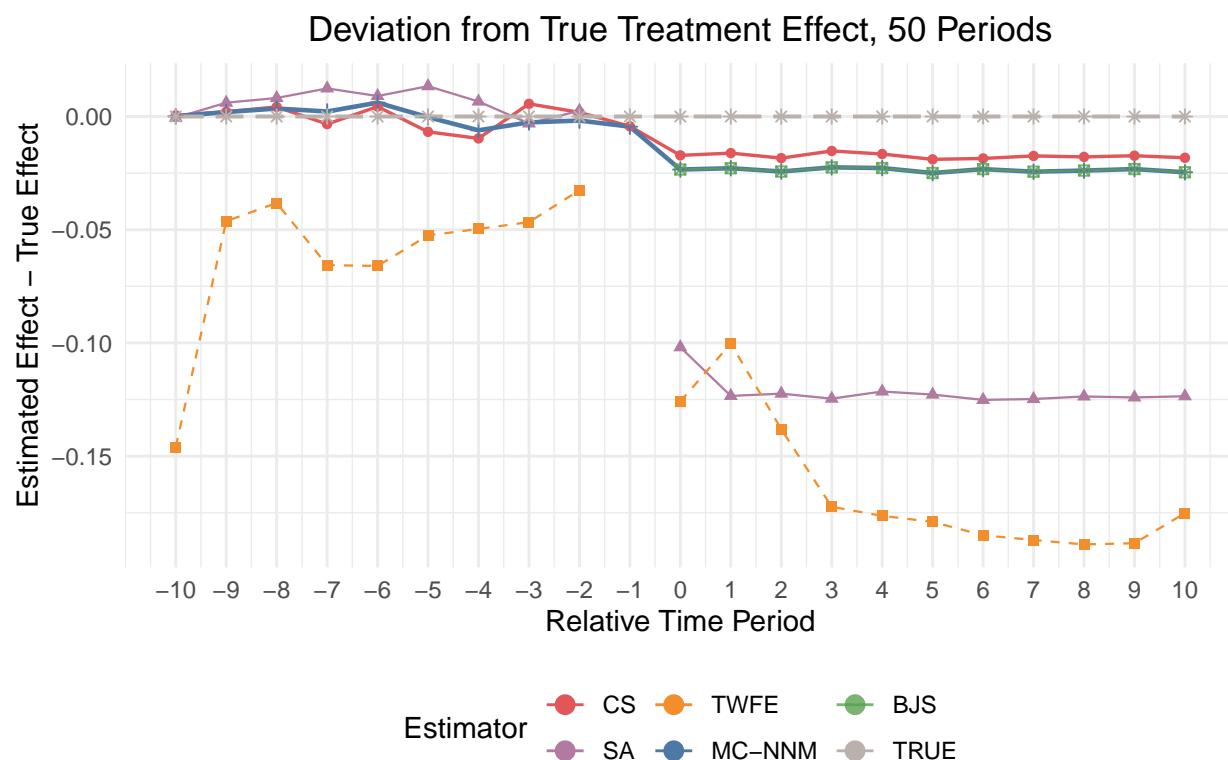
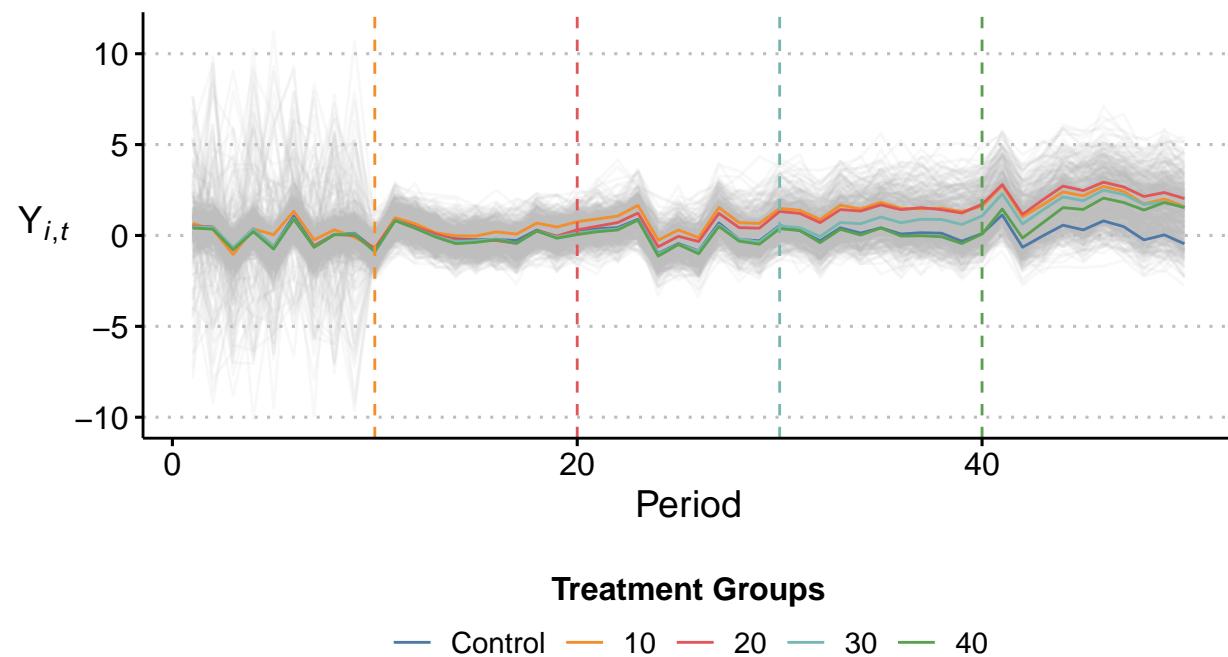


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.097	0.106	0.119	0.004			
2	MC-NNM	-0.019	0.083	0.210	0.039	-0.024	0.045	-0.040
3	TWFE	-0.546	-0.008	0.443	0.157	-0.114	0.193	-0.062
4	CS	-0.247	0.086	0.394	0.110	-0.020	0.112	-0.034
5	SA	-0.577	0.002	0.475	0.163	-0.104	0.194	-0.073
6	BJS	-0.019	0.083	0.210	0.039	-0.024	0.045	-0.050

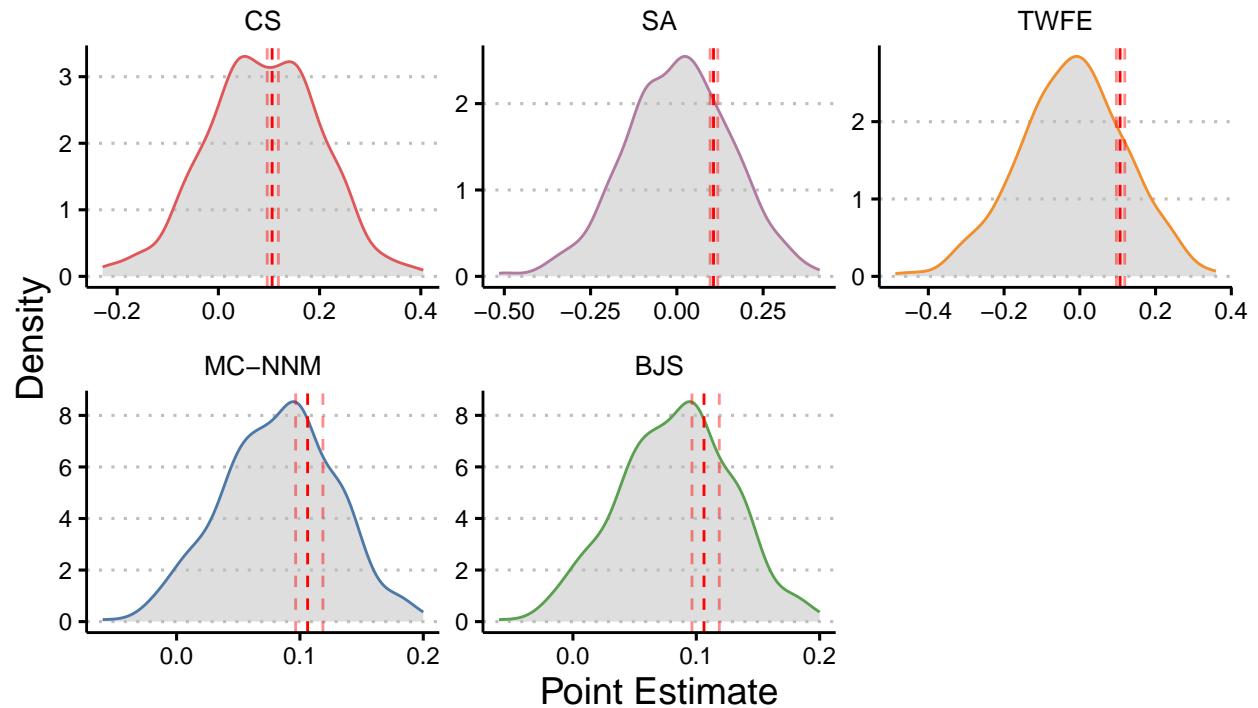
50 periods

Outcome Data from One Draw of Simulation 8 with 50 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 50 Periods

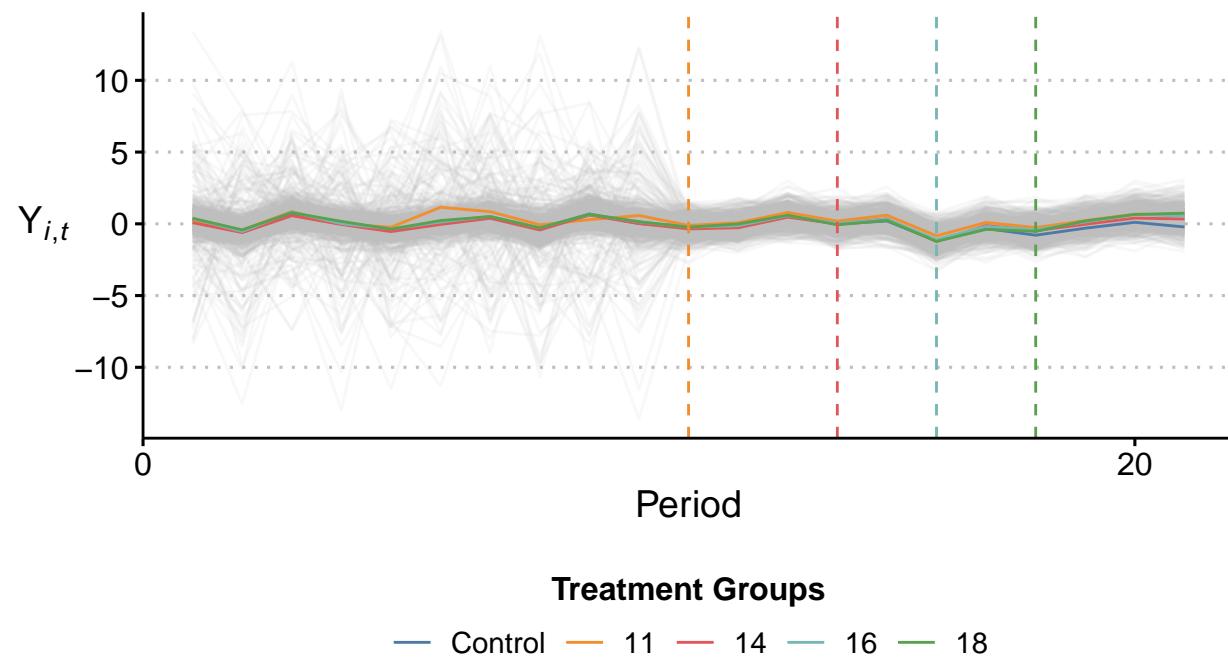


Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

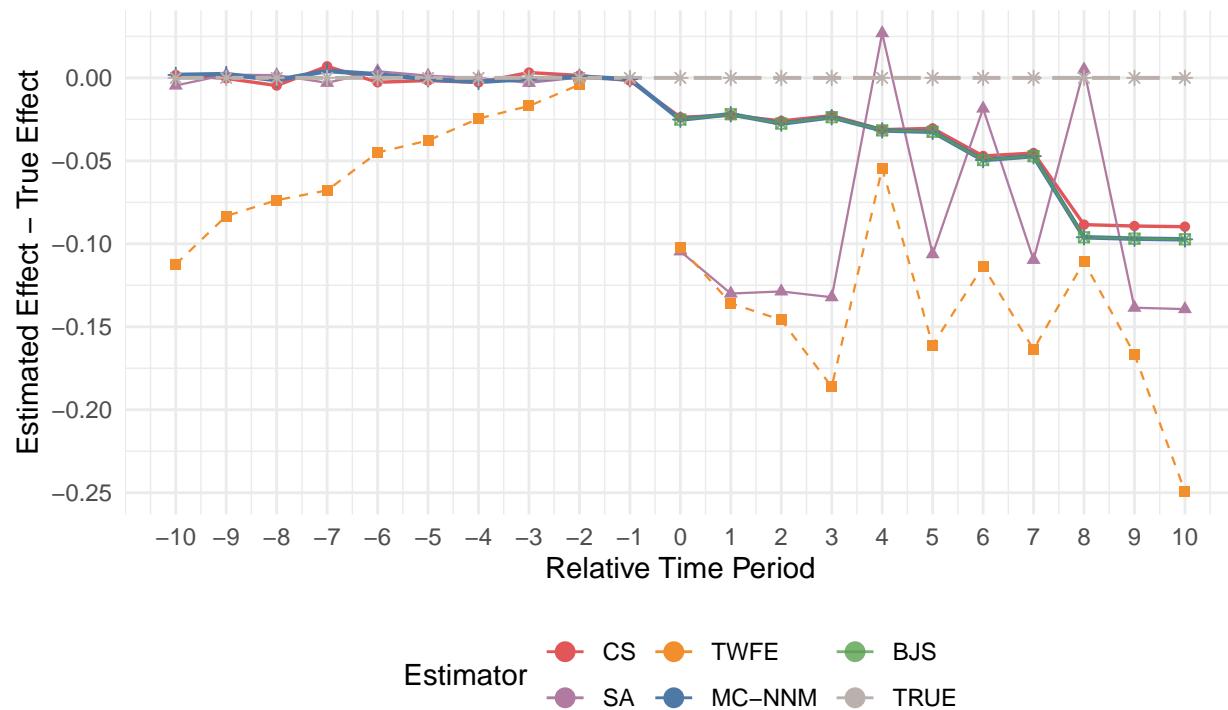
	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.097	0.106	0.119	0.004			
2	MC-NNM	-0.060	0.083	0.200	0.045	-0.023	0.051	-0.039
3	TWFE	-0.487	-0.020	0.360	0.141	-0.126	0.188	-0.067
4	CS	-0.229	0.089	0.405	0.112	-0.017	0.112	-0.028
5	SA	-0.515	0.004	0.414	0.153	-0.102	0.184	-0.067
6	BJS	-0.060	0.083	0.200	0.045	-0.023	0.051	-0.049

21 periods

Outcome Data from One Draw of Simulation 8 with 21 Periods

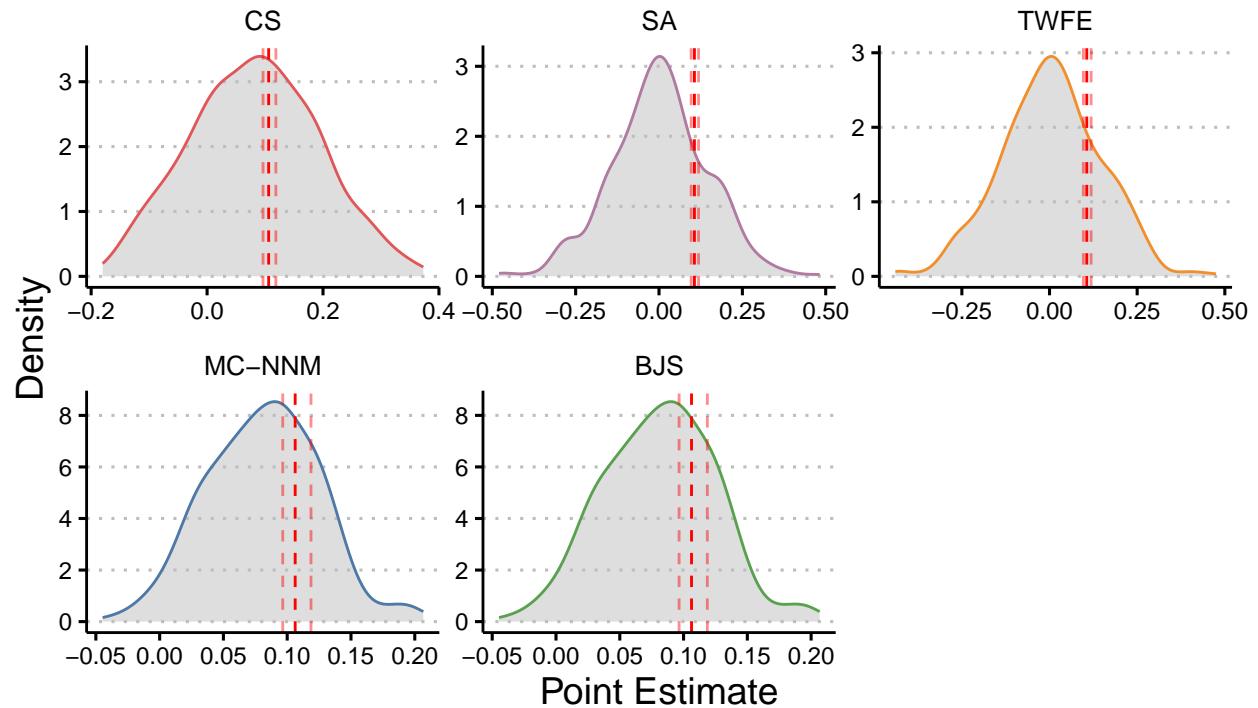


Deviation from True Treatment Effect, 21 Periods



Mean of point estimates of the Treatment Effect for each estimator in Relative Periods -10 to 10 over 500 iterations .
Missing Points mean that an Estimate is not produced for that relative period.

Distributions of Relative Period 0 Effect Estimates, 21 Periods



Density of point estimates of the treatment effect in relative period 0 for each estimator.
Vertical Red Lines indicate minimum, mean, and maximum of true parameter value.

	Estimator	Min	Mean	Max	SD	t=0 Bias	t=0 RMSE	All Relative Periods Bias
1	TRUE	0.097	0.106	0.119	0.004			
2	MC-NNM	-0.045	0.081	0.207	0.044	-0.025	0.050	-0.026
3	TWFE	-0.440	0.004	0.475	0.142	-0.102	0.175	-0.103
4	CS	-0.180	0.083	0.373	0.110	-0.024	0.112	-0.025
5	SA	-0.480	0.002	0.482	0.142	-0.105	0.176	-0.049
6	BJS	-0.045	0.081	0.207	0.044	-0.025	0.050	-0.050