

Supplementary Tables

Article Title: Estimating causal effects of rare treatments on binary outcomes: Addressing sample size requirements and bias correction

Table S1: Estimates of IPSW-ATE for different propensity score models with covariates $k = 6$ and for varying prevalence of treatment variable (p), sample size n and EPV values. The results are summarized over 2000 simulations with true ATE = 0.42.

ExPrev (%)	EPV	n	Correctly Specified Model					Misspecified Model-1					Misspecified Model-2				
			ATE	bias	robSE	simSE	ratio	ATE	bias	robSE	simSE	ratio	ATE	bias	robSE	simSE	ratio
5	2	240	0.467	0.051	0.833	1.087	0.766	0.490	0.075	0.821	1.053	0.779	0.478	0.063	0.857	1.212	0.708
	3	360	0.492	0.077	0.700	0.903	0.775	0.509	0.094	0.691	0.877	0.788	0.504	0.089	0.726	0.987	0.735
	5	600	0.455	0.040	0.550	0.611	0.90	0.483	0.068	0.542	0.598	0.905	0.450	0.035	0.577	0.666	0.867
	8	960	0.416	0.000	0.436	0.457	0.954	0.443	0.028	0.43	0.45	0.955	0.420	0.005	0.459	0.492	0.932
	10	1200	0.439	0.024	0.389	0.406	0.959	0.463	0.047	0.384	0.398	0.965	0.436	0.021	0.413	0.437	0.944
	12	1440	0.425	0.009	0.356	0.365	0.975	0.448	0.033	0.351	0.358	0.98	0.422	0.007	0.377	0.393	0.959
10	2	120	0.47	0.054	0.835	1.086	0.769	0.488	0.072	0.824	1.03	0.800	0.481	0.065	0.857	1.19	0.720
	3	180	0.478	0.062	0.695	0.834	0.834	0.486	0.071	0.686	0.813	0.844	0.465	0.049	0.719	0.922	0.780
	5	300	0.458	0.042	0.541	0.607	0.891	0.486	0.070	0.533	0.583	0.915	0.449	0.033	0.565	0.661	0.855
	8	480	0.436	0.02	0.425	0.443	0.961	0.459	0.043	0.419	0.432	0.970	0.433	0.017	0.449	0.48	0.936
	10	600	0.443	0.027	0.383	0.381	1.007	0.471	0.056	0.378	0.375	1.010	0.442	0.026	0.405	0.413	0.980
	12	720	0.437	0.021	0.348	0.342	1.018	0.465	0.049	0.343	0.341	1.006	0.434	0.019	0.368	0.369	0.997
15	2	80	0.513	0.091	0.838	1.068	0.784	0.523	0.101	0.826	1.028	0.803	0.552	0.13	0.857	1.15	0.745
	3	120	0.469	0.047	0.697	0.802	0.869	0.487	0.065	0.686	0.766	0.895	0.480	0.058	0.72	0.873	0.824
	5	200	0.462	0.040	0.541	0.590	0.916	0.489	0.067	0.532	0.578	0.921	0.460	0.038	0.561	0.636	0.883
	8	320	0.417	-0.005	0.426	0.427	0.998	0.442	0.020	0.420	0.422	0.996	0.411	-0.011	0.447	0.462	0.969
	10	400	0.432	0.010	0.379	0.367	1.034	0.457	0.035	0.375	0.361	1.037	0.423	0.001	0.399	0.397	1.007
	12	480	0.434	0.013	0.345	0.330	1.045	0.463	0.041	0.341	0.328	1.038	0.430	0.008	0.363	0.356	1.021
20	2	60	0.466	0.045	0.856	1.039	0.824	0.49	0.069	0.844	0.983	0.858	0.484	0.063	0.875	1.134	0.772
	3	90	0.516	0.094	0.709	0.808	0.877	0.542	0.121	0.698	0.776	0.899	0.514	0.093	0.727	0.857	0.849
	5	150	0.439	0.018	0.544	0.553	0.984	0.464	0.043	0.536	0.544	0.985	0.439	0.017	0.567	0.604	0.939
	8	240	0.439	0.018	0.427	0.420	1.016	0.463	0.041	0.421	0.409	1.028	0.442	0.021	0.447	0.457	0.977
	10	300	0.432	0.011	0.378	0.355	1.066	0.460	0.039	0.374	0.351	1.063	0.428	0.007	0.397	0.384	1.035
	12	360	0.426	0.005	0.345	0.332	1.040	0.455	0.034	0.341	0.327	1.044	0.427	0.005	0.360	0.358	1.006

Table S2: Standardized Mean Difference (SMD) for checking covariate balancing between LBW and normal birth weight while estimating IPSW-ATE for LBW on stunting.

Covariates	Categories	Balance before weighting			Balance after weighting		
		Normal	LBW	SMD	Normal	LBW	SMD
	n	1765	318		2084	2065	
Mother's Education	no education	47 (2.7)	18 (5.8)	0.212	66 (3.2)	67 (3.3)	0.034
	primary	270 (15.3)	61 (19.2)		331 (15.9)	334 (16.2)	
	secondary	928 (52.6)	163 (51.2)		1092 (52.4)	1105 (53.5)	
	higher	520 (29.5)	76 (23.8)		595 (28.5)	558 (27.0)	
Mother's Height	≤ 145 cm	208 (10.59)	68(18.4)	0.05	264 (11.78)	265 (11.83)	0.009
	> 145 cm	1754 (89.41)	310 (81.96)		1974 (88.22)	1975 (88.17)	
Antenatal Care	<4	592 (33.5)	124 (38.9)	0.112	716.0 (34.3)	694.9 (33.6)	0.015
	≥ 4	1174 (66.5)	195 (61.1)		1369 (65.7)	1371 (66.4)	
Socio economic status	poorest	186 (10.5)	50 (15.8)	0.206	236 (11.3)	245 (11.9)	0.03
	poorer	261 (14.8)	49 (15.3)		310 (14.9)	314 (15.2)	
	middle	337 (19.1)	66 (20.6)		403 (19.4)	411 (19.9)	
	richer	434 (24.6)	79 (24.8)		513 (24.6)	490 (23.7)	
	richest	547 (31.0)	75 (23.6)		622 (29.8)	606 (29.3)	
Division	Barisal	83 (4.7)	13 (4.2)	0.215	96 (4.6)	95 (4.6)	0.043
	Chittagong	292 (16.6)	73 (23.0)		366 (17.6)	373 (18.1)	
	Dhaka	527 (29.8)	90 (28.2)		616.1 (29.5)	593.1 (28.7)	
	Khulna	211 (11.9)	37 (11.6)		248.1 (11.9)	253.5 (12.3)	
	Mymensingh	147 (8.3)	16 (5.0)		163 (7.8)	164 (8.0)	
	Rajshahi	203 (11.5)	40 (12.4)		242.2 (11.6)	235.6 (11.4)	
	Rangpur	230 (13.0)	34 (10.6)		263 (12.6)	248 (12.0)	
	Sylhet	73 (4.2)	15 (4.9)		89 (4.3)	102 (5.0)	