

Figure 5. Estimated power for Cox model, using (13)-(14), sensitivity analysis with 20% early censoring: 1, test of $\beta_2 = 0$; 2, test of $\beta_1^* = \beta_1$

Table XVII. Simulation results for Cox model with continuous primary predictor and continuous mediator, sensitivity analysis allowing for 20% early censoring shown in top row of Figure 5

σ_1^2	$\log RH_1$	σ_2^2	$\log RH_2$	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
1	0.5	1	0.2	0.3	0.2	1078	216	79.2	79.7	1124	225	80.8	81.3
1	0.5	1	0.2	0.5	0.2	1308	262	80.8	80.9	1375	275	82.8	82.6
1	0.5	1	0.3	0.3	0.2	479	96	78.9	78.2	494	99	81.7	82.7
1	0.5	1	0.3	0.5	0.2	581	116	78.1	78.4	589	118	81.0	81.1
1	0.5	1	0.4	0.3	0.2	270	54	77.4	76.8	296	59	82.9	82.4
1	0.5	1	0.4	0.5	0.2	327	65	80.0	80.5	355	71	83.8	83.9
1	0.5	1	0.2	0.3	0.5	431	216	82.4	82.8	439	219	79.9	79.7
1	0.5	1	0.2	0.5	0.5	523	262	78.9	79.7	567	283	81.0	81.4
1	0.5	1	0.3	0.3	0.5	192	96	79.0	78.5	201	101	79.6	80.3
1	0.5	1	0.3	0.5	0.5	233	116	78.8	78.8	249	124	79.8	79.8
1	0.5	1	0.4	0.3	0.5	108	54	79.4	80.0	119	60	79.5	80.9
1	0.5	1	0.4	0.5	0.5	131	65	76.7	77.1	149	75	82.2	82.6

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.

Table XVIII. Simulation results for Cox model with binary primary predictor and continuous mediator, sensitivity analysis allowing for 20% early censoring shown in second row of Figure 5

f_1	$\log RH_1$	σ_2^2	$\log RH_2$	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
0.5	0.5	1	0.2	0.3	0.2	1078	216	82.3	82.3	1105	221	79.7	80.5
0.5	0.5	1	0.2	0.5	0.2	1308	262	78.1	77.4	1337	267	80.2	80.5
0.5	0.5	1	0.3	0.3	0.2	479	96	78.9	78.3	487	97	80.3	79.7
0.5	0.5	1	0.3	0.5	0.2	581	116	79.2	80.1	572	114	79.4	80.3
0.5	0.5	1	0.4	0.3	0.2	270	54	80.5	80.0	276	55	81.5	81.9
0.5	0.5	1	0.4	0.5	0.2	327	65	78.1	78.6	345	69	82.1	81.7
0.5	0.5	1	0.2	0.3	0.5	431	216	80.8	80.8	443	222	77.9	77.2
0.5	0.5	1	0.2	0.5	0.5	523	262	77.9	78.1	532	266	80.9	81.1
0.5	0.5	1	0.3	0.3	0.5	192	96	79.8	79.9	199	99	79.7	79.6
0.5	0.5	1	0.3	0.5	0.5	233	116	75.9	76.9	236	118	79.9	80.5
0.5	0.5	1	0.4	0.3	0.5	108	54	77.8	77.9	121	60	83.4	83.0
0.5	0.5	1	0.4	0.5	0.5	131	65	78.6	78.9	142	71	83.1	82.9

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.

Table XIX. Simulation results for Cox model with continuous primary predictor and binary mediator, sensitivity analysis allowing for 20% early censoring, shown in third row of Figure 5

σ_1^2	RH_1	f_2	RH_2	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
1	1.4	0.25	1.5	0.3	0.2	1399	280	85.3	85.4	1134	227	78.9	79.0
1	1.4	0.25	1.5	0.5	0.2	1697	339	85.8	85.5	1437	287	80.1	79.5
1	1.4	0.25	2.0	0.3	0.2	479	96	87.5	87.2	383	77	81.6	81.4
1	1.4	0.25	2.0	0.5	0.2	581	116	88.4	88.5	496	99	84.2	84.0
1	1.4	0.50	1.5	0.3	0.2	1049	210	78.2	78.4	1166	233	80.4	80.5
1	1.4	0.50	1.5	0.5	0.2	1273	255	78.5	78.8	1384	277	82.0	81.9
1	1.4	0.50	2.0	0.3	0.2	359	72	76.4	76.7	414	83	84.7	84.9
1	1.4	0.50	2.0	0.5	0.2	436	87	75.5	76.0	538	108	84.4	84.2
1	1.4	0.25	1.5	0.3	0.5	560	280	85.4	85.2	487	244	79.9	80.1
1	1.4	0.25	1.5	0.5	0.5	679	339	85.1	85.7	601	301	80.7	80.8
1	1.4	0.25	2.0	0.3	0.5	191	96	83.8	83.9	161	80	78.9	79.3
1	1.4	0.25	2.0	0.5	0.5	232	116	85.5	85.8	199	100	80.4	81.3
1	1.4	0.50	1.5	0.3	0.5	420	210	78.0	78.5	435	218	81.2	81.1
1	1.4	0.50	1.5	0.5	0.5	509	255	80.5	80.4	539	270	81.3	81.8
1	1.4	0.50	2.0	0.3	0.5	144	72	79.5	80.2	157	78	82.7	82.8
1	1.4	0.50	2.0	0.5	0.5	174	87	78.1	78.4	192	96	82.6	82.9

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.

Table XX. Simulation results for Cox model with binary primary predictor and binary mediator, sensitivity analysis allowing for 20% early censoring shown in bottom row of Figure 5

f_1	RH_1	f_2	RH_2	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
0.5	2	0.25	1.5	0.3	0.2	1399	280	88.4	88.3	1156	231	80.5	80.3
0.5	2	0.25	1.5	0.5	0.2	1697	339	88.4	88.2	1316	263	82.2	82.7
0.5	2	0.25	2.0	0.3	0.2	479	96	86.7	86.9	390	78	82.0	81.8
0.5	2	0.25	2.0	0.5	0.2	581	116	88.9	89.1	440	88	80.8	80.9
0.5	2	0.50	1.5	0.3	0.2	1049	210	79.8	79.5	1114	223	82.1	81.7
0.5	2	0.50	1.5	0.5	0.2	1273	255	75.9	76.1	1362	272	79.1	79.8
0.5	2	0.50	2.0	0.3	0.2	359	72	78.2	78.0	424	85	85.1	85.1
0.5	2	0.50	2.0	0.5	0.2	436	87	76.5	76.4	531	106	82.7	82.9
0.5	2	0.25	1.5	0.3	0.5	560	280	84.9	84.7	478	239	81.3	80.5
0.5	2	0.25	1.5	0.5	0.5	679	339	86.7	86.4	549	275	80.6	81.1
0.5	2	0.25	2.0	0.3	0.5	191	96	87.4	87.0	160	80	77.0	77.4
0.5	2	0.25	2.0	0.5	0.5	232	116	87.1	87.5	191	95	82.8	82.5
0.5	2	0.50	1.5	0.3	0.5	420	210	80.0	80.5	435	218	79.1	79.0
0.5	2	0.50	1.5	0.5	0.5	509	255	78.8	79.3	527	263	80.1	80.0
0.5	2	0.50	2.0	0.3	0.5	144	72	79.6	80.2	160	80	83.0	82.6
0.5	2	0.50	2.0	0.5	0.5	174	87	80.0	80.2	193	97	82.7	82.6

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.

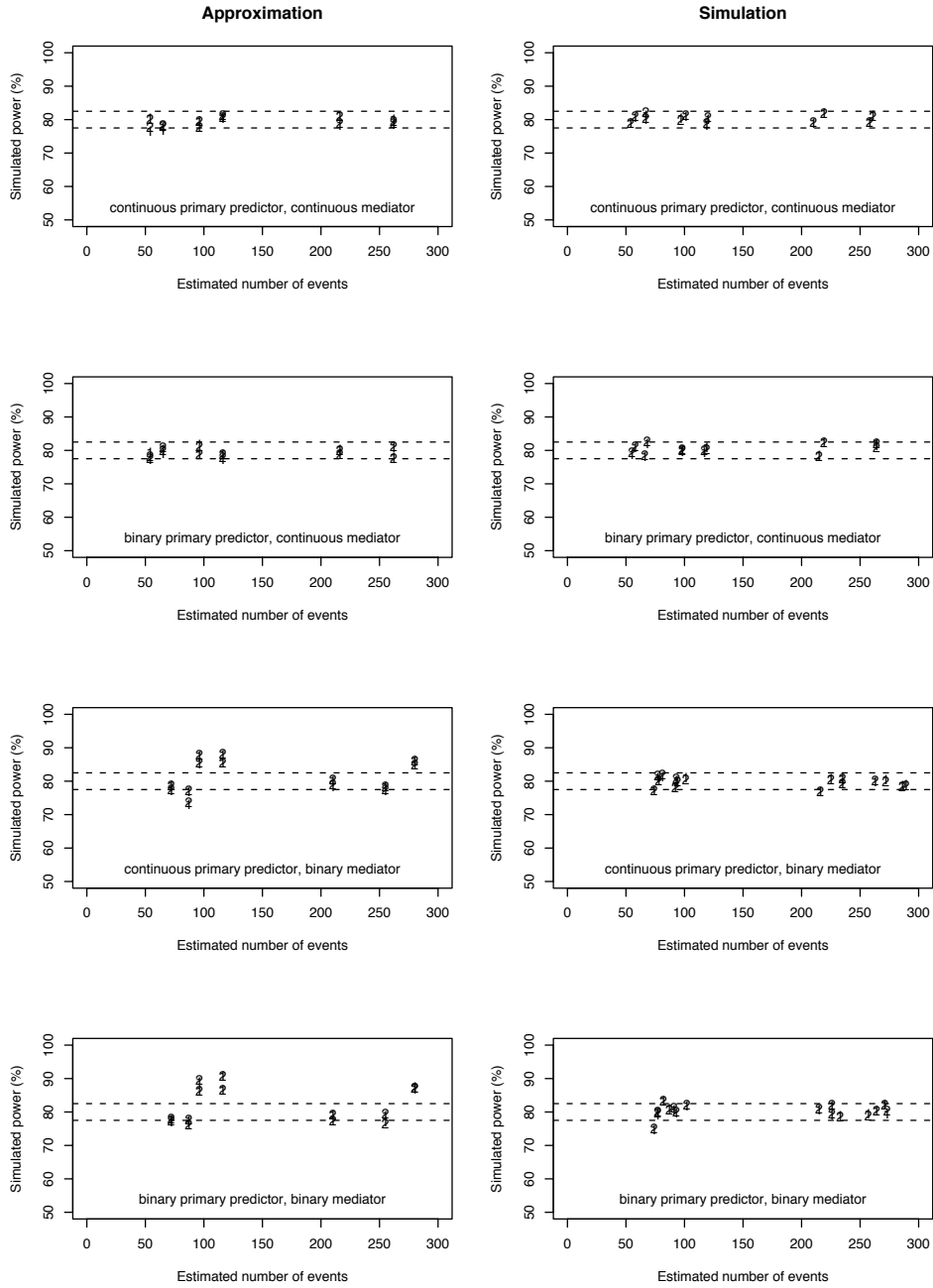


Figure 6. Estimated power for Cox model, using (13)-(14), sensitivity analysis not directly controlling

number of events: 1, test of $\beta_2 = 0$; 2, test of $\beta_1^* = \beta_1$

Table XXI. Simulation results for Cox model with continuous primary predictor and continuous mediator, sensitivity analysis not directly controlling number of events, shown in top row of Figure 6

σ_1^2	$\log RH_1$	σ_2^2	$\log RH_2$	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
1	0.5	1	0.2	0.3	0.2	1078	216	81.2	81.0	1049	210	78.9	79.2
1	0.5	1	0.2	0.5	0.2	1308	262	80.1	79.5	1291	258	79.3	79.3
1	0.5	1	0.3	0.3	0.2	479	96	79.6	79.6	486	97	80.4	80.0
1	0.5	1	0.3	0.5	0.2	581	116	80.4	81.2	598	120	80.2	80.6
1	0.5	1	0.4	0.3	0.2	270	54	80.5	80.2	268	54	79.0	79.1
1	0.5	1	0.4	0.5	0.2	327	65	77.8	78.5	333	67	81.2	82.2
1	0.5	1	0.2	0.3	0.5	431	216	78.5	78.9	438	219	81.8	82.0
1	0.5	1	0.2	0.5	0.5	523	262	78.7	79.0	522	261	81.4	81.1
1	0.5	1	0.3	0.3	0.5	192	96	77.8	77.9	202	101	80.9	81.2
1	0.5	1	0.3	0.5	0.5	233	116	80.8	80.7	237	119	78.5	78.9
1	0.5	1	0.4	0.3	0.5	108	54	76.6	77.9	116	58	80.6	81.1
1	0.5	1	0.4	0.5	0.5	131	65	76.9	78.1	133	67	80.1	80.5

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.

Table XXII. Simulation results for Cox model with binary primary predictor and continuous mediator, sensitivity analysis not directly controlling number of events, shown in second row of Figure 6

f_1	$\log RH_1$	σ_2^2	$\log RH_2$	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
0.5	0.5	1	0.2	0.3	0.2	1078	216	80.4	79.9	1095	219	82.4	82.4
0.5	0.5	1	0.2	0.5	0.2	1308	262	80.9	81.3	1322	264	82.2	82.1
0.5	0.5	1	0.3	0.3	0.2	479	96	81.7	81.2	488	98	80.1	79.9
0.5	0.5	1	0.3	0.5	0.2	581	116	77.4	77.9	586	117	79.5	80.1
0.5	0.5	1	0.4	0.3	0.2	270	54	79.5	78.3	274	55	78.8	79.5
0.5	0.5	1	0.4	0.5	0.2	327	65	80.3	80.8	330	66	78.3	78.7
0.5	0.5	1	0.2	0.3	0.5	431	216	79.2	78.8	430	215	78.5	78.4
0.5	0.5	1	0.2	0.5	0.5	523	262	78.0	77.8	528	264	81.6	80.9
0.5	0.5	1	0.3	0.3	0.5	192	96	78.9	78.8	196	98	79.6	80.4
0.5	0.5	1	0.3	0.5	0.5	233	116	78.9	78.8	239	119	80.8	80.2
0.5	0.5	1	0.4	0.3	0.5	108	54	77.4	77.8	115	58	80.9	81.1
0.5	0.5	1	0.4	0.5	0.5	131	65	79.1	80.1	136	68	82.2	82.8

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.

Table XXIII. Simulation results for Cox model with continuous primary predictor and binary mediator, sensitivity analysis not directly controlling number of events, shown in third row of Figure 6

σ_1^2	RH_1	f_2	RH_2	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
1	1.4	0.25	1.5	0.3	0.2	1399	280	86.2	86.2	1177	235	80.9	80.7
1	1.4	0.25	1.5	0.5	0.2	1697	339	85.6	85.6	1430	286	78.8	78.5
1	1.4	0.25	2.0	0.3	0.2	479	96	87.7	87.8	372	74	77.4	77.2
1	1.4	0.25	2.0	0.5	0.2	581	116	88.0	88.1	458	92	78.3	78.0
1	1.4	0.50	1.5	0.3	0.2	1049	210	78.4	78.9	1126	225	80.8	80.5
1	1.4	0.50	1.5	0.5	0.2	1273	255	77.4	77.5	1358	272	80.5	79.9
1	1.4	0.50	2.0	0.3	0.2	359	72	77.2	77.6	405	81	81.4	82.0
1	1.4	0.50	2.0	0.5	0.2	436	87	73.1	73.8	504	101	81.1	80.6
1	1.4	0.25	1.5	0.3	0.5	560	280	85.0	84.9	470	235	79.4	79.4
1	1.4	0.25	1.5	0.5	0.5	679	339	83.8	83.6	578	289	79.0	78.8
1	1.4	0.25	2.0	0.3	0.5	191	96	85.3	85.5	156	78	80.3	80.3
1	1.4	0.25	2.0	0.5	0.5	232	116	85.7	85.7	188	94	79.5	79.9
1	1.4	0.50	1.5	0.3	0.5	420	210	80.2	80.5	433	216	77.1	77.0
1	1.4	0.50	1.5	0.5	0.5	509	255	78.3	78.3	525	263	80.0	80.3
1	1.4	0.50	2.0	0.3	0.5	144	72	78.6	78.8	153	77	81.1	81.8
1	1.4	0.50	2.0	0.5	0.5	174	87	76.9	77.4	185	93	80.3	80.7

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.

Table XXIV. Simulation results for Cox model with binary primary predictor and binary mediator, sensitivity analysis not directly controlling number of events, shown in bottom row of Figure 6

f_1	RH_1	f_2	RH_2	ρ	ψ	N_1	D_1	P_{11}	P_{12}	N_2	D_2	P_{21}	P_{22}
0.5	2	0.25	1.5	0.3	0.2	1399	280	86.9	87.2	1128	226	79.2	79.5
0.5	2	0.25	1.5	0.5	0.2	1697	339	90.9	90.8	1286	257	79.5	78.9
0.5	2	0.25	2.0	0.3	0.2	479	96	89.1	89.6	368	74	74.9	75.0
0.5	2	0.25	2.0	0.5	0.2	581	116	90.9	90.7	437	87	80.9	80.8
0.5	2	0.50	1.5	0.3	0.2	1049	210	79.1	79.3	1131	226	81.9	82.1
0.5	2	0.50	1.5	0.5	0.2	1273	255	77.0	76.6	1353	271	82.2	82.1
0.5	2	0.50	2.0	0.3	0.2	359	72	77.1	77.4	409	82	83.3	83.4
0.5	2	0.50	2.0	0.5	0.2	436	87	76.3	76.2	508	102	81.9	82.3
0.5	2	0.25	1.5	0.3	0.5	560	280	87.4	87.2	466	233	78.9	78.6
0.5	2	0.25	1.5	0.5	0.5	679	339	89.2	89.3	546	273	79.5	80.3
0.5	2	0.25	2.0	0.3	0.5	191	96	86.3	86.4	154	77	79.2	79.9
0.5	2	0.25	2.0	0.5	0.5	232	116	86.5	86.6	182	91	80.7	81.3
0.5	2	0.50	1.5	0.3	0.5	420	210	77.3	77.5	431	215	80.8	80.9
0.5	2	0.50	1.5	0.5	0.5	509	255	79.0	79.4	528	264	80.3	80.3
0.5	2	0.50	2.0	0.3	0.5	144	72	77.7	78.1	154	77	79.8	80.0
0.5	2	0.50	2.0	0.5	0.5	174	87	77.4	77.6	186	93	79.8	80.1

ψ : Fraction of uncensored observations.

N_1, D_1 : Sample size, events estimated using approximate formula (13).

N_2, D_2 : Sample size, events estimated using Monte Carlo integration and (14).

P_{11}, P_{21} : Estimated percent power to reject $\beta_2 = 0$.

P_{12}, P_{22} : Estimated percent power to reject $\beta_1^* = \beta_1$.