SUPPLEMENTARY MATERIAL

Supplementary Material for "Design with the Maximin Efficiency Robust Test for an Immunotherapy under the Generalized Delayed Treatment Effect Pattern"

ARTICLE HISTORY
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1. Detailed simulation results

In this section, we drew Tables S1-S3 to present the detailed simulation results, namely the accurate values of the sample size estimations and empirical power, which are obtained in the simulation studies in the section 3.1 of the main text. Tables S1-S3 correspond to the considered asymptotic variances σ_1^2, σ_2^2 and σ_3^2, respectively.

Table 1. Accuracies of sample size estimations with σ_1^2 under a variety of scenarios

			Sample size (Empirical power)				
n_1/n_0	λ	τ	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1	0.4	60	87(0.89693)	97(0.89749)	92(0.89775)	90(0.89773)	94(0.90174)
1	0.5	60	143(0.89937)	158(0.89887)	150(0.89794)	148(0.89797)	153(0.89858)
1	0.6	60	251(0.90004)	277(0.89927)	263(0.89844)	259(0.90026)	268(0.89965)
1	0.7	60	495(0.89828)	545(0.89985)	519(0.90038)	511(0.89842)	528(0.89982)
1	0.8	60	1229(0.90059)	1350(0.89956)	1287(0.89978)	1267(0.90043)	1307(0.90049)
2	0.4	60	90(0.88551)	101(0.88918)	96(0.89048)	94(0.89082)	97(0.8891)
2	0.5	60	152(0.89368)	169(0.89345)	160(0.89204)	157(0.89294)	163(0.89317)
2	0.6	60	271(0.89564)	300(0.89593)	285(0.89498)	280(0.89375)	290(0.8963)
2	0.7	60	543(0.89537)	599(0.89672)	570(0.89553)	561(0.89493)	579(0.89517)
2	0.8	60	1362(0.89808)	1496(0.90116)	1426(0.89819)	1404(0.89809)	1449(0.89808)
1	0.4	48	102(0.89978)	115(0.89977)	108(0.9003)	106(0.90012)	110(0.89846)
1	0.5	48	165(0.89799)	185(0.89804)	174(0.89883)	171(0.89854)	178(0.90007)
1	0.6	48	287(0.89874)	321(0.8983)	303(0.89967)	297(0.89919)	309(0.89865)
1	0.7	48	563(0.89864)	627(0.89798)	594(0.89881)	583(0.89907)	605(0.89832)
1	0.8	48	1388(0.89933)	1542(0.90016)	1461(0.90008)	1436(0.89977)	1487(0.9002)
2	0.4	48	104(0.88563)	118(0.88744)	110(0.88409)	108(0.88355)	113(0.88293)
2	0.5	48	173(0.88709)	195(0.88888)	183(0.88574)	180(0.889)	187(0.88918)
2	0.6	48	308(0.89097)	345(0.8944)	325(0.89314)	319(0.89236)	331(0.89164)
2	0.7	48	614(0.8959)	684(0.89464)	647(0.89486)	636(0.89585)	659(0.89508)
2	0.8	48	1533(0.89761)	1703(0.89766)	1614(0.89531)	1586(0.89669)	1642(0.89644)
1	0.4	36	136(0.90075)	158(0.899)	146(0.89825)	143(0.90046)	150(0.90074)
1	0.5	36	218(0.89841)	252(0.89911)	234(0.89977)	228(0.89845)	240(0.89857)
1	0.6	36	375(0.89914)	432(0.89874)	402(0.89817)	393(0.89931)	412(0.89993)
1	0.7	36	730(0.89927)	837(0.89989)	780(0.89785)	763(0.8994)	798(0.89838)
1	0.8	36	1784(0.89978)	2039(0.89987)	1904(0.90101)	1862(0.89929)	1947(0.90013)
2	0.4	36	137(0.87992)	160(0.88184)	148(0.88253)	144(0.87859)	152(0.8816)
2	0.5	36	226(0.88472)	262(0.88715)	243(0.88534)	237(0.88514)	249(0.88448)
2	0.6	36	398(0.88812)	460(0.8916)	427(0.89055)	417(0.8887)	437(0.89023)
2	0.7	36	789(0.89014)	906(0.89276)	844(0.8937)	825(0.89234)	864(0.89375)
2	0.8	36	1960(0.89636)	2241(0.8963)	2092(0.89337)	2046(0.89711)	2139(0.89639)

Table 2. Accuracies of sample size estimations with σ_2^2 under a variety of scenarios

			Sample size (Empirical power)				
n_1/n_0	λ	τ	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1	0.4	60	87(0.89872)	96(0.8943)	92(0.89888)	90(0.89809)	93(0.89562)
1	0.5	60	143(0.89912)	158(0.89888)	150(0.89882)	148(0.89988)	153(0.89733)
1	0.6	60	251(0.89861)	277(0.89913)	264(0.89951)	260(0.90171)	268(0.89876)
1	0.7	60	497(0.90036)	546(0.89999)	520(0.89878)	512(0.90017)	529(0.89896)
1	0.8	60	1231(0.9019)	1351(0.89969)	1288(0.89952)	1268(0.89848)	1308(0.89877)
2	0.4	60	102(0.91878)	113(0.91996)	107(0.92096)	105(0.91801)	109(0.92138)
2	0.5	60	167(0.91707)	184(0.91714)	175(0.91791)	172(0.91808)	178(0.91816)
2	0.6	60	291(0.91231)	321(0.91389)	305(0.91483)	300(0.91287)	310(0.91407)
2	0.7	60	571(0.91053)	628(0.91167)	598(0.91171)	589(0.91034)	608(0.90874)
2	0.8	60	1405(0.90616)	1541(0.90778)	1470(0.90667)	1448(0.90865)	1493(0.90712)
1	0.4	48	100(0.89433)	112(0.89176)	106(0.89373)	104(0.89536)	108(0.89508)
1	0.5	48	164(0.89653)	183(0.89614)	173(0.89699)	170(0.89674)	176(0.8951)
1	0.6	48	286(0.89811)	320(0.89965)	302(0.89814)	297(0.89863)	308(0.9)
1	0.7	48	563(0.89957)	627(0.89912)	593(0.898)	583(0.89943)	604(0.89998)
1	0.8	48	1389(0.89812)	1542(0.90069)	1461(0.90023)	1436(0.89922)	1487(0.901)
2	0.4	48	115(0.91295)	130(0.9142)	122(0.91063)	120(0.9113)	125(0.91311)
2	0.5	48	189(0.91101)	211(0.91268)	199(0.91087)	196(0.91315)	203(0.91244)
2	0.6	48	329(0.91175)	367(0.91026)	347(0.91054)	341(0.91003)	353(0.91068)
2	0.7	48	644(0.90767)	716(0.90791)	678(0.90763)	666(0.90735)	690(0.90663)
2	0.8	48	1579(0.90632)	1752(0.90412)	1662(0.90498)	1633(0.90492)	1691(0.90575)
1	0.4	36	131(0.88911)	153(0.88884)	141(0.88623)	138(0.88974)	145(0.89006)
1	0.5	36	214(0.89473)	247(0.89206)	230(0.89464)	224(0.89509)	235(0.89286)
1	0.6	36	372(0.89798)	428(0.89803)	399(0.8959)	389(0.89778)	408(0.89438)
1	0.7	36	727(0.89662)	833(0.8988)	777(0.89807)	760(0.89682)	795(0.89725)
1	0.8	36	1782(0.9003)	2036(0.9006)	1901(0.89837)	1860(0.89903)	1944(0.90056)
2	0.4	36	149(0.90536)	173(0.90366)	161(0.90472)	157(0.9058)	165(0.90556)
2	0.5	36	244(0.90619)	281(0.90621)	261(0.90425)	255(0.90511)	268(0.90735)
2	0.6	36	423(0.9055)	486(0.9043)	453(0.90502)	443(0.9071)	464(0.90851)
2	0.7	36	825(0.90568)	945(0.90484)	882(0.90434)	862(0.90454)	902(0.90506)
2	0.8	36	2017(0.9031)	2303(0.90308)	2151(0.90385)	2105(0.90385)	2200(0.90328)

Table 3. Accuracies of sample size estimations with σ_3^2 under a variety of scenarios

			Sample size (Empirical power)				
n_1/n_0	λ	τ	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
1	0.4	60	87(0.8989)	97(0.89706)	92(0.89796)	90(0.89703)	93(0.89508)
1	0.5	60	143(0.89904)	158(0.89822)	150(0.89969)	148(0.89996)	153(0.8993)
1	0.6	60	251(0.89904)	277(0.89918)	263(0.89842)	259(0.8979)	268(0.90015)
1	0.7	60	496(0.90062)	546(0.89884)	520(0.90001)	512(0.8994)	528(0.90064)
1	0.8	60	1230(0.90073)	1350(0.90109)	1287(0.90019)	1267(0.90034)	1308(0.89972)
2	0.4	60	96(0.90223)	107(0.90588)	101(0.90553)	99(0.9017)	103(0.90819)
2	0.5	60	159(0.90395)	176(0.90565)	167(0.90535)	164(0.90509)	170(0.90482)
2	0.6	60	281(0.90522)	310(0.90587)	295(0.90613)	290(0.90474)	300(0.90473)
2	0.7	60	557(0.90248)	613(0.90285)	584(0.90575)	574(0.90408)	593(0.90371)
2	0.8	60	1383(0.90167)	1519(0.9028)	1448(0.9027)	1426(0.90239)	1471(0.90459)
1	0.4	48	101(0.89879)	113(0.89618)	107(0.89533)	105(0.89648)	109(0.89673)
1	0.5	48	164(0.89713)	184(0.90113)	174(0.89772)	170(0.89707)	177(0.89957)
1	0.6	48	287(0.89859)	320(0.89996)	303(0.89952)	297(0.89856)	308(0.89974)
1	0.7	48	563(0.89778)	627(0.89929)	594(0.89859)	583(0.90165)	604(0.90092)
1	0.8	48	1389(0.9)	1542(0.89974)	1461(0.9009)	1436(0.89935)	1487(0.90079)
2	0.4	48	109(0.89988)	123(0.89814)	116(0.8987)	114(0.89796)	118(0.89957)
2	0.5	48	181(0.90205)	203(0.89905)	191(0.90055)	188(0.90259)	195(0.90073)
2	0.6	48	318(0.90021)	355(0.90085)	336(0.89927)	330(0.90027)	342(0.8995)
2	0.7	48	628(0.90038)	700(0.90071)	662(0.9001)	651(0.90183)	674(0.90079)
2	0.8	48	1556(0.90079)	1727(0.90094)	1637(0.90164)	1609(0.901)	1666(0.90076)
1	0.4	36	134(0.89765)	155(0.89287)	144(0.8956)	140(0.89449)	147(0.89291)
1	0.5	36	216(0.89701)	250(0.89696)	232(0.89824)	226(0.8959)	238(0.89803)
1	0.6	36	374(0.89828)	430(0.89757)	400(0.89845)	391(0.89775)	410(0.90023)
1	0.7	36	729(0.89888)	835(0.89991)	779(0.89933)	761(0.8996)	797(0.89891)
1	0.8	36	1783(0.9025)	2037(0.90062)	1902(0.90119)	1861(0.89829)	1945(0.89887)
2	0.4	36	143(0.89351)	166(0.89273)	154(0.89419)	150(0.89158)	158(0.89325)
2	0.5	36	235(0.89654)	271(0.89544)	252(0.89548)	246(0.89469)	258(0.89461)
2	0.6	36	411(0.89809)	473(0.89868)	440(0.89906)	429(0.89791)	450(0.89829)
2	0.7	36	807(0.8999)	925(0.89828)	863(0.90135)	843(0.89698)	883(0.89852)
2	0.8	36	1988(0.89884)	2272(0.89976)	2121(0.8971)	2075(0.90011)	2169(0.89976)