SUPPLEMENTARY MATERIAL

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

Bosheng Li[a], Jingyi Zhang[a] and Fangrong Yan[a]

[a] Research Center of Biostatistics and Computational Pharmacy, China Pharmaceutical University, Nanjing China.

ARTICLE HISTORY
Compiled March 10, 2022

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.

CONTACT Fangrong Yan. Email: f.r.yan@163.com

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)