Supplementary Materials

Table 1. Simulation study results of power in *5*-by-*5* contingency table

w	Sampling Design	n	χ^2	G^2	FT^2	CR	FFH
0.1	Balanced	100	0.0658	0.1165	0.1018	0.0677	0.0667
		200	0.0968	0.1214	0.1024	0.1011	0.1002
		500	0.2161	0.2315	0.2193	0.2179	0.2200
	Almost Balanced	100	0.0757	0.1346	0.1151	0.0791	0.0801
		200	0.1172	0.1416	0.1189	0.1187	0.1169
		500	0.2550	0.2688	0.2531	0.2557	0.2561
	Imbalanced	100	0.0723	0.1289	0.0709	0.0703	0.0868
		200	0.1069	0.1638	0.1332	0.1084	0.1245
		500	0.2531	0.2820	0.2616	0.2559	0.2658
0.3	Balanced	100	0.4006	0.5628	0.5205	0.4221	0.4244
		200	0.8280	0.8898	0.8742	0.8449	0.8556
		500	1.0000	1.0000	1.0000	1.0000	1.0000
	Almost Balanced	100	0.3793	0.5174	0.4635	0.3958	0.4053
		200	0.7792	0.8260	0.7988	0.7874	0.7940
		500	0.9990	0.9991	0.9992	0.9990	0.9990
	Imbalanced	100	0.4104	0.5494	0.4300	0.4096	0.5020
		200	0.7810	0.8312	0.7939	0.7839	0.8366
		500	0.9985	0.9986	0.9985	0.9986	0.9988
0.5	Balanced	100	0.9448	0.9910	0.9867	0.9566	0.9586
		200	1.0000	1.0000	1.0000	1.0000	1.0000
		500	1.0000	1.0000	1.0000	1.0000	1.0000
	Almost Balanced	100	0.9412	0.9713	0.9565	0.9487	0.9547
		200	0.9999	0.9999	0.9999	0.9999	0.9999
		500	1.0000	1.0000	1.000	1.0000	1.0000
	Imbalanced	100	0.9423	0.9745	0.9560	0.9482	0.9745
		200	0.9421	0.9734	0.9522	0.9477	0.9738
		500	1.0000	1.0000	1.0000	1.0000	1.0000

Table 2. Simulation study results of power in *5*-by-*2* contingency table

w	Sampling Design	n	χ^2	G^2	FT^2	CR	FFH
0.1	Balanced	40	0.0656	0.0950	0.0819	0.0769	0.0619
		80	0.0964	0.1103	0.1002	0.0971	0.0946
		200	0.1661	0.1743	0.1683	0.1681	0.1680
	Almost Balanced	40	0.0673	0.1089	0.0948	0.0735	0.0713
		80	0.0899	0.1055	0.0936	0.0921	0.0906
		200	0.1653	0.1735	0.1684	0.1679	0.1656
	Imbalanced	40	0.0514	0.0949	0.0634	0.0531	0.0703
		80	0.0912	0.1333	0.1211	0.0966	0.1027
		200	0.1709	0.1826	0.1720	0.1737	0.1729
0.3	Balanced	40	0.2837	0.3494	0.3071	0.3074	0.2674
		80	0.5500	0.5809	0.5527	0.5521	0.5403
		200	0.9513	0.9534	0.9504	0.9515	0.9502
	Almost Balanced	40	0.2663	0.3442	0.3044	0.2768	0.2672
		80	0.5260	0.5529	0.5231	0.5306	0.5216
		200	0.9449	0.9462	0.9430	0.9452	0.9429
	Imbalanced	40	0.2932	0.3855	0.3250	0.2962	0.3539
		80	0.5625	0.6094	0.5853	0.5755	0.609
		200	0.9567	0.9595	0.9571	0.9571	0.9575
0.5	Balanced	40	0.7870	0.8343	0.8088	0.8124	0.7790
		80	0.9890	0.9907	0.9894	0.9891	0.9888
		200	1.0000	1.0000	1.0000	1.0000	1.0000
	Almost Balanced	40	0.7558	0.8012	0.7636	0.7630	0.7579
		80	0.9852	0.9868	0.9849	0.9856	0.9848
		200	1.0000	1.0000	1.0000	1.0000	1.0000
	Imbalanced	40	0.7710	0.8137	0.7815	0.7723	0.8123
		80	0.7758	0.8171	0.7850	0.7766	0.8169
		200	1.0000	1.0000	1.0000	1.0000	1.0000

Table 3. Simulation study results of type I error rate in *5*-by-*5* contingency table

Sampling Design	n	χ^2	G^2	FT^2	CR	FFH
Balanced	100	0.0463	0.0901	0.0761	0.0492	0.0483
	200	0.0471	0.0629	0.0532	0.0493	0.0488
	500	0.0478	0.0524	0.0479	0.0476	0.0479
Almost Balanced	100	0.0503	0.0938	0.0798	0.0524	0.0507
	200	0.0503	0.0660	0.0568	0.0510	0.0527
	500	0.0496	0.0550	0.0503	0.0490	0.0502
Imbalanced	100	0.0454	0.0815	0.0359	0.0402	0.0476
	200	0.0446	0.0800	0.0615	0.0460	0.0493
	500	0.0494	0.0629	0.0619	0.0498	0.0507

Table 4. Simulation study results of type I error rate in *5*-by-*2* size of table

Sampling Design	n	χ^2	G^2	FT^2	CR	FFH
Balanced	40	0.0472	0.0724	0.0607	0.0564	0.0452
	80	0.0502	0.0597	0.0528	0.0505	0.0473
	200	0.0511	0.0539	0.0512	0.0515	0.0499
Almost Balanced	40	0.0464	0.0851	0.0729	0.0513	0.0489
	80	0.0483	0.0578	0.0509	0.0500	0.0490
	200	0.0498	0.0538	0.0491	0.0504	0.0508
Imbalanced	40	0.0345	0.0678	0.0418	0.0354	0.0451
	80	0.0392	0.0717	0.0643	0.0428	0.0447
	200	0.0462	0.0550	0.0500	0.0480	0.0498