Supplementary Materials for "Risk Difference, Relative Risk and Odds Ratio for Non-Inferiority Clinical Trials with Risk Rate Endpoint"

1 Supplementary table and figures of MOVER

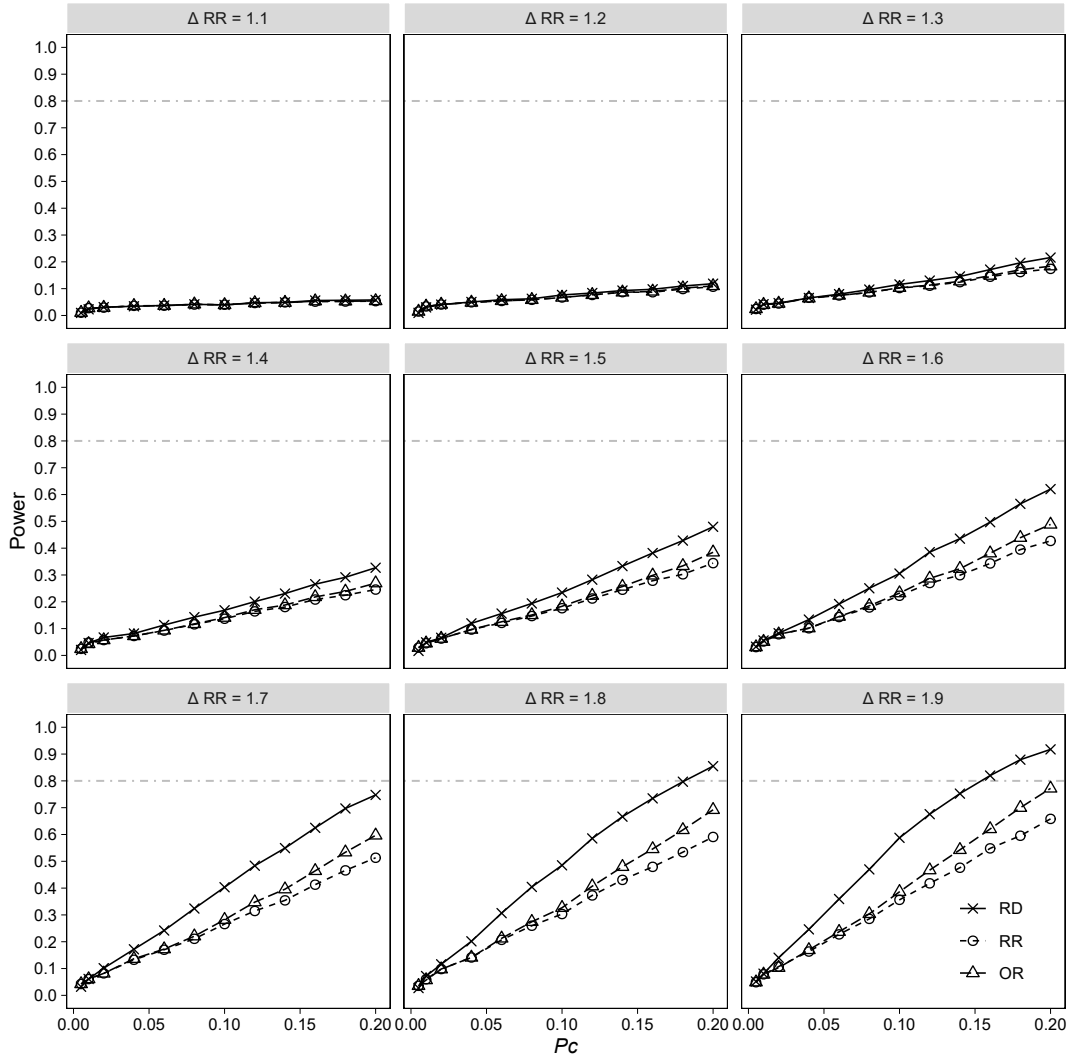

Figure S1: Power comparison of the testing NI with MOVER using RD, RR and OR metrics (sample size n=500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power when $p_T = 0.5(p_C\Delta_{RR} + p_C)$ is assumed based on 10000 simulations.

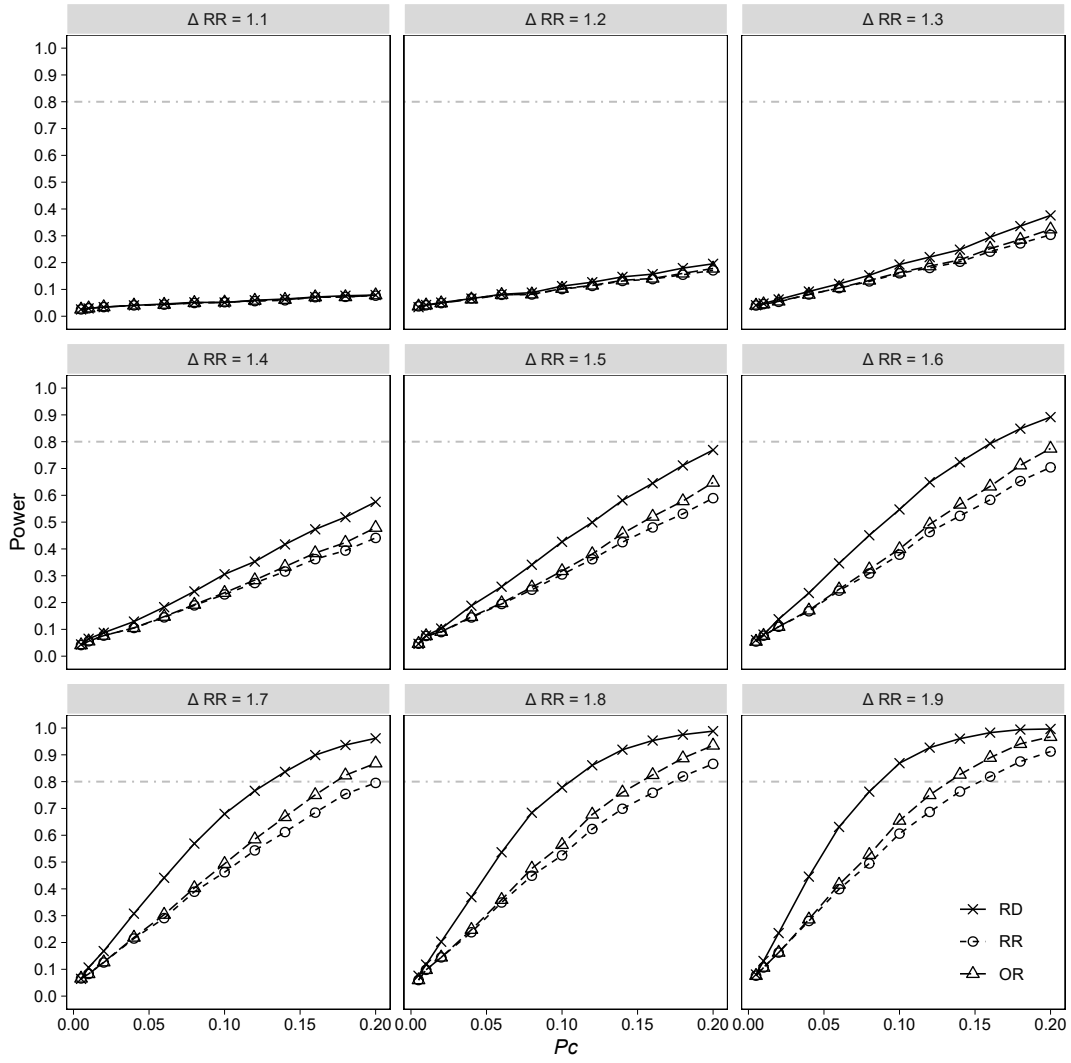

Figure S2: Power comparison of the testing NI with MOVER using RD, RR and OR metrics (sample size n=1000 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power when $p_T = 0.5(p_C\Delta_{RR} + p_C)$ is assumed based on 10000 simulations.

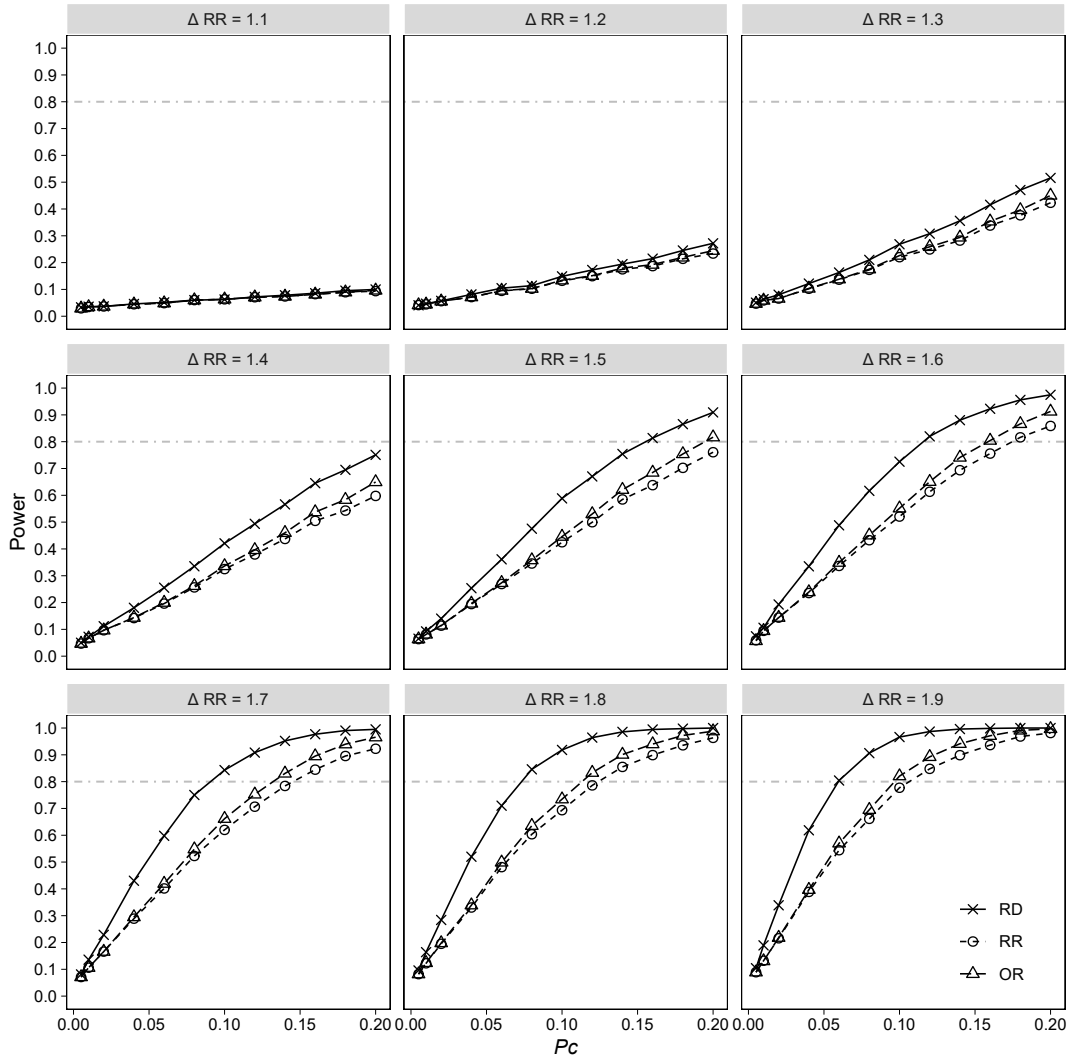

Figure S3: Power comparison of the testing NI with MOVER using RD, RR and OR metrics (sample size n=1500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power under the when $p_T = 0.5(p_C\Delta_{RR} + p_C)$ is assumed based on 10000 simulations.

Table S1: Sample size required of MOVER for different metrics to achieve 80% power when $p_T = 0.5(p_C\Delta_{RR} + p_C)$.

Δ_{RR}	p_C	p_T	Δ_{RD}	Δ_{OR}	n_{RD}	n_{RR}	n_{OR}	n_{RD}/n_{RR}	n_{OR}/n_{RR}	n_{RD}/n_{OR}
1.1	0.005	0.00525	0.0005	1.101	1281346	1409492	1408775	0.91	1.00	0.91
	0.01	0.01050	0.0010	1.101	637361	701120	700403	0.91	1.00	0.91
	0.02	0.02100	0.0020	1.102	315369	346934	346218	0.91	1.00	0.91
	0.1	0.10500	0.0100	1.112	57775	63586	62871	0.91	0.99	0.92
	0.2	0.21000	0.0200	1.128	25577	28168	27454	0.91	0.97	0.93
1.3	0.005	0.00575	0.0015	1.302	149884	194766	194462	0.77	1.00	0.77
	0.01	0.01150	0.0030	1.304	74526	96862	96558	0.77	1.00	0.77
	0.02	0.02300	0.0060	1.308	36847	47910	47607	0.77	0.99	0.77
	0.1	0.11500	0.0300	1.345	6704	8749	8447	0.77	0.97	0.79
	0.2	0.23000	0.0600	1.405	2936	3854	3555	0.76	0.92	0.83
1.5	0.005	0.00625	0.0025	1.504	56848	85106	84881	0.67	1.00	0.67
	0.01	0.01250	0.0050	1.508	28252	42318	42093	0.67	0.99	0.67
	0.02	0.02500	0.0100	1.515	13954	20924	20700	0.67	0.99	0.67
	0.1	0.12500	0.0500	1.588	2516	3809	3587	0.66	0.94	0.70
	0.2	0.25000	0.1000	1.714	1087	1671	1452	0.65	0.87	0.75
1.7	0.005	0.00675	0.0035	1.706	30558	51711	51517	0.59	1.00	0.59
	0.01	0.01350	0.0070	1.712	15178	25709	25515	0.59	0.99	0.59
	0.02	0.02700	0.0140	1.725	7487	12708	12514	0.59	0.98	0.60
	0.1	0.13500	0.0700	1.843	1335	2308	2117	0.58	0.92	0.63
	0.2	0.27000	0.1400	2.061	567	1008	821	0.56	0.81	0.69
1.9	0.005	0.00725	0.0045	1.909	19466	36686	36506	0.53	1.00	0.53
	0.01	0.01450	0.0090	1.917	9662	18237	18057	0.53	0.99	0.54
	0.02	0.02900	0.0180	1.936	4760	9012	8833	0.53	0.98	0.54
	0.1	0.14500	0.0900	2.111	839	1633	1457	0.51	0.89	0.58
	0.2	0.29000	0.1800	2.452	349	712	541	0.49	0.76	0.65

2 Tables and figures of Wald method

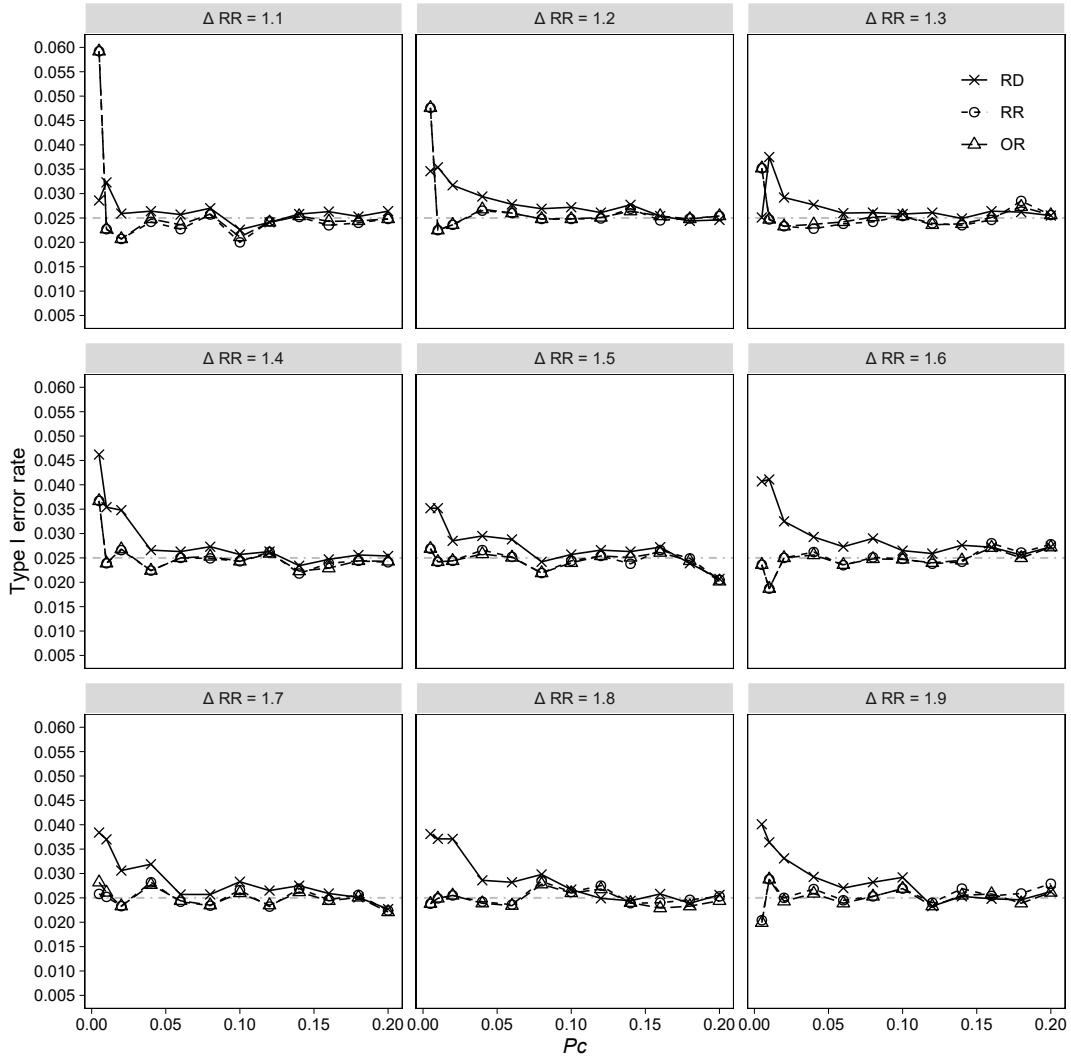

Figure S4: Type I error rate for the testing NI with Wald method using RD, RR and OR metrics (sample size n=500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical rejection rates under the null hypothesis based on 10000 simulations.

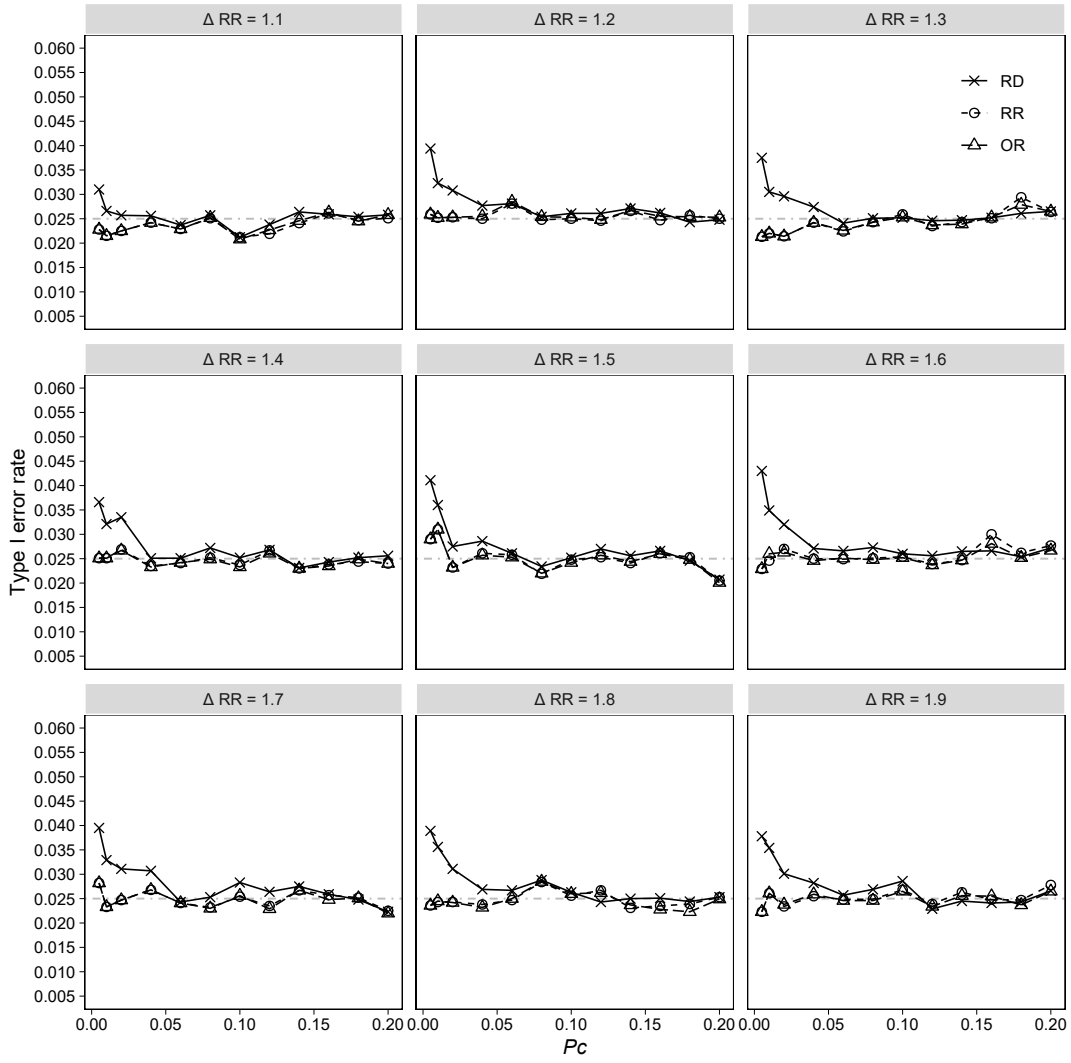

Figure S5: Type I error rate for the testing NI with Wald method using RD, RR and OR metrics (sample size n=1000 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical rejection rates under the null hypothesis based on 10000 simulations.

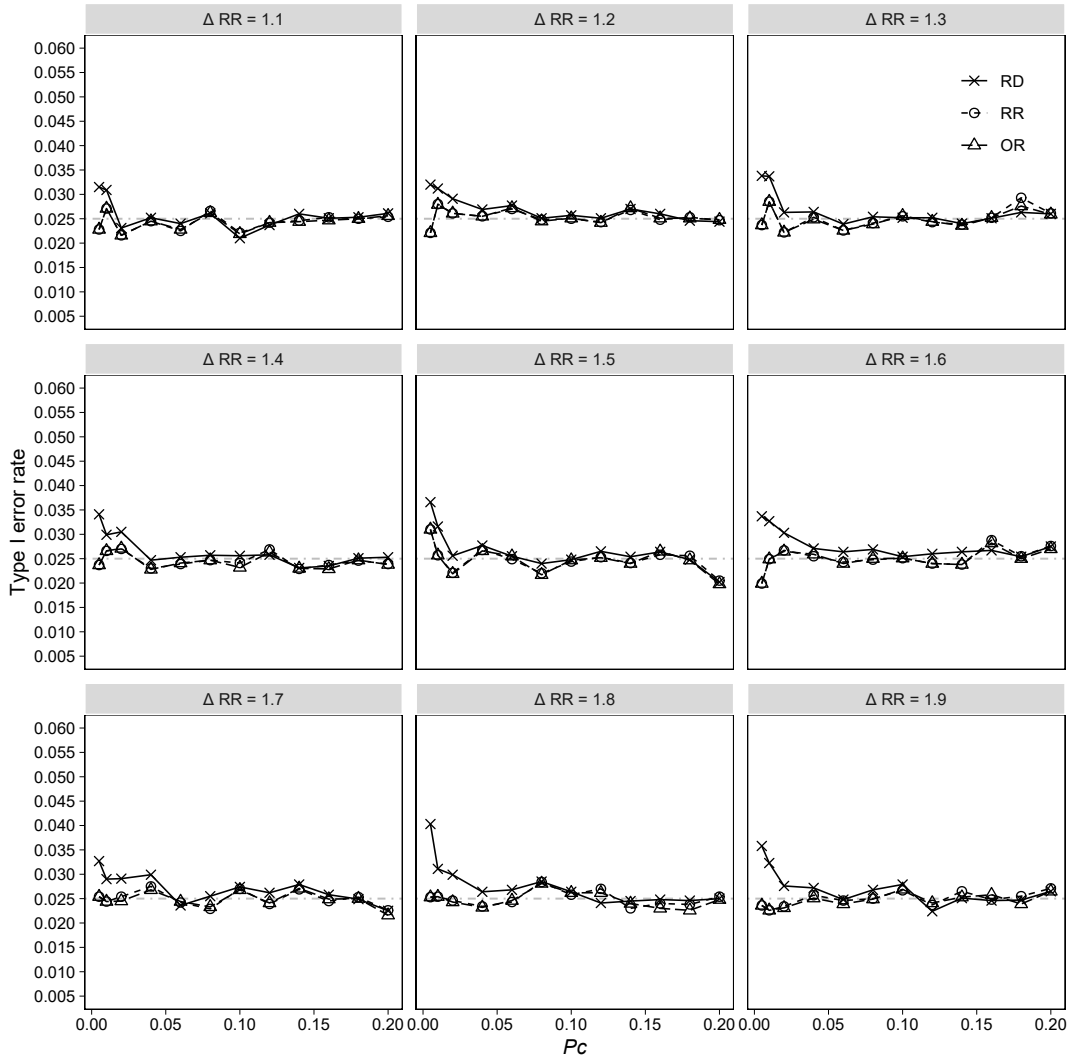

Figure S6: Type I error rate for the testing NI with Wald method using RD, RR and OR metrics (sample size n=1500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical rejection rates under the null hypothesis based on 10000 simulations.

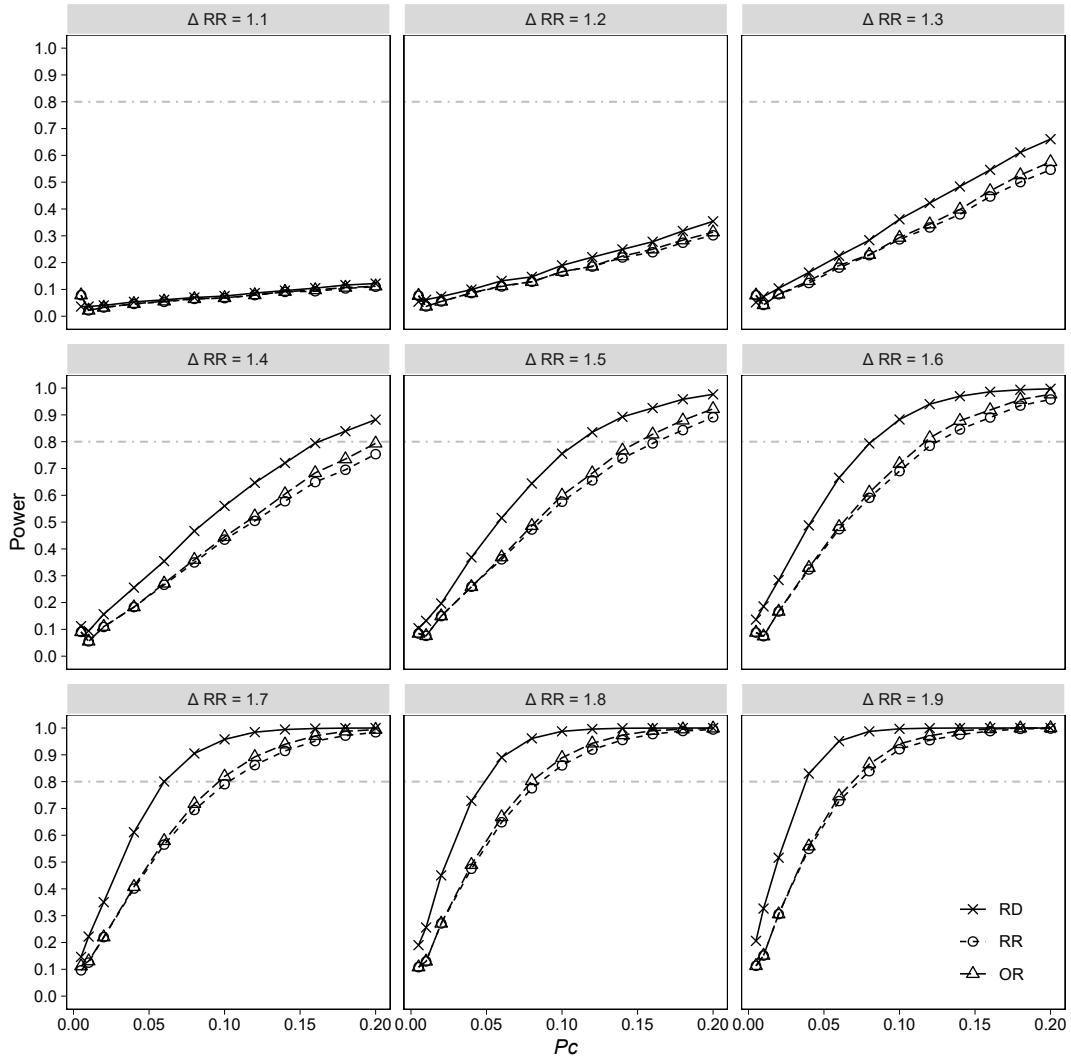

Figure S7: Power comparison of the testing NI with Wald method using RD, RR and OR metrics (sample size n=500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power when $p_T = p_C$ is assumed based on 10000 simulations.

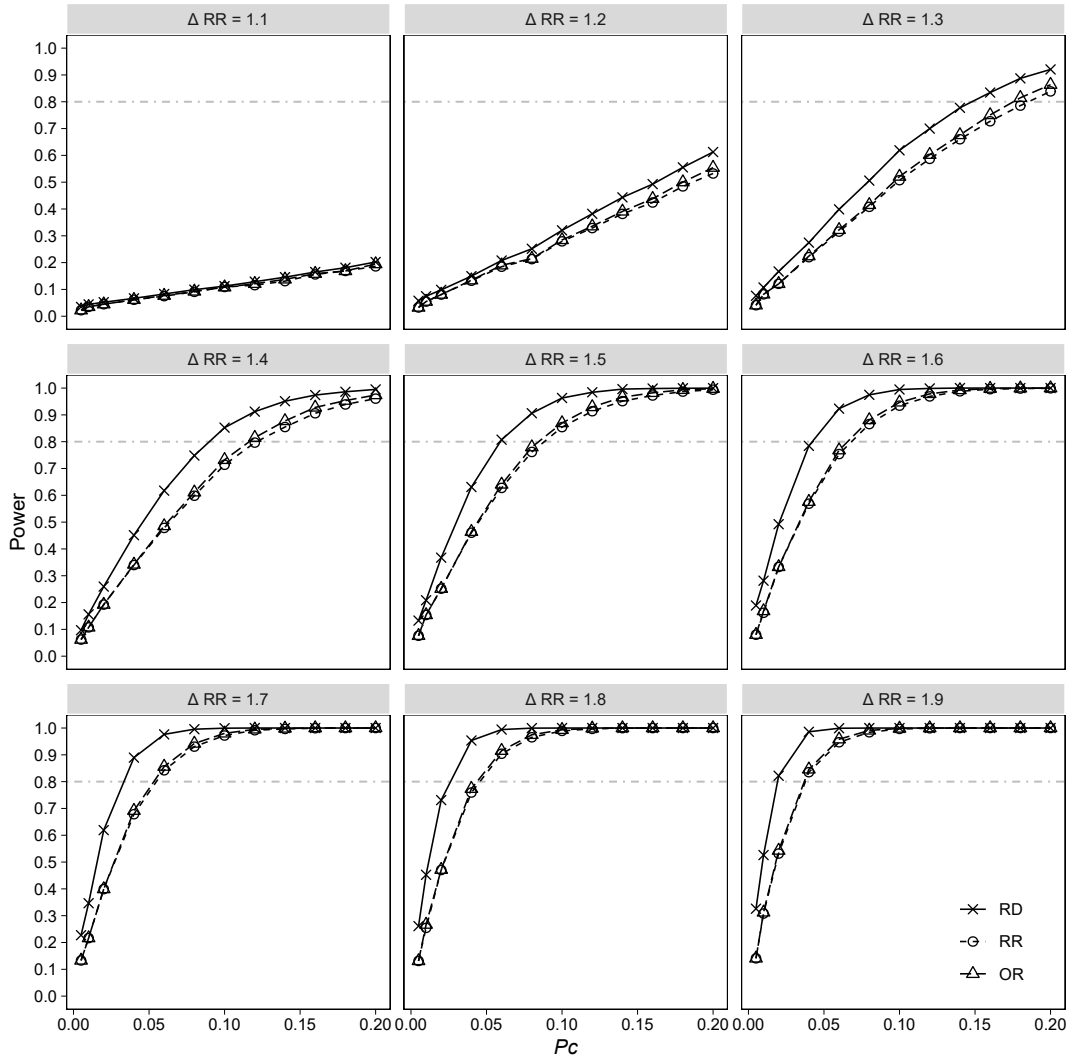

Figure S8: Power comparison of the testing NI with Wald method using RD, RR and OR metrics (sample size n=1000 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power when $p_T = p_C$ is assumed based on 10000 simulations.

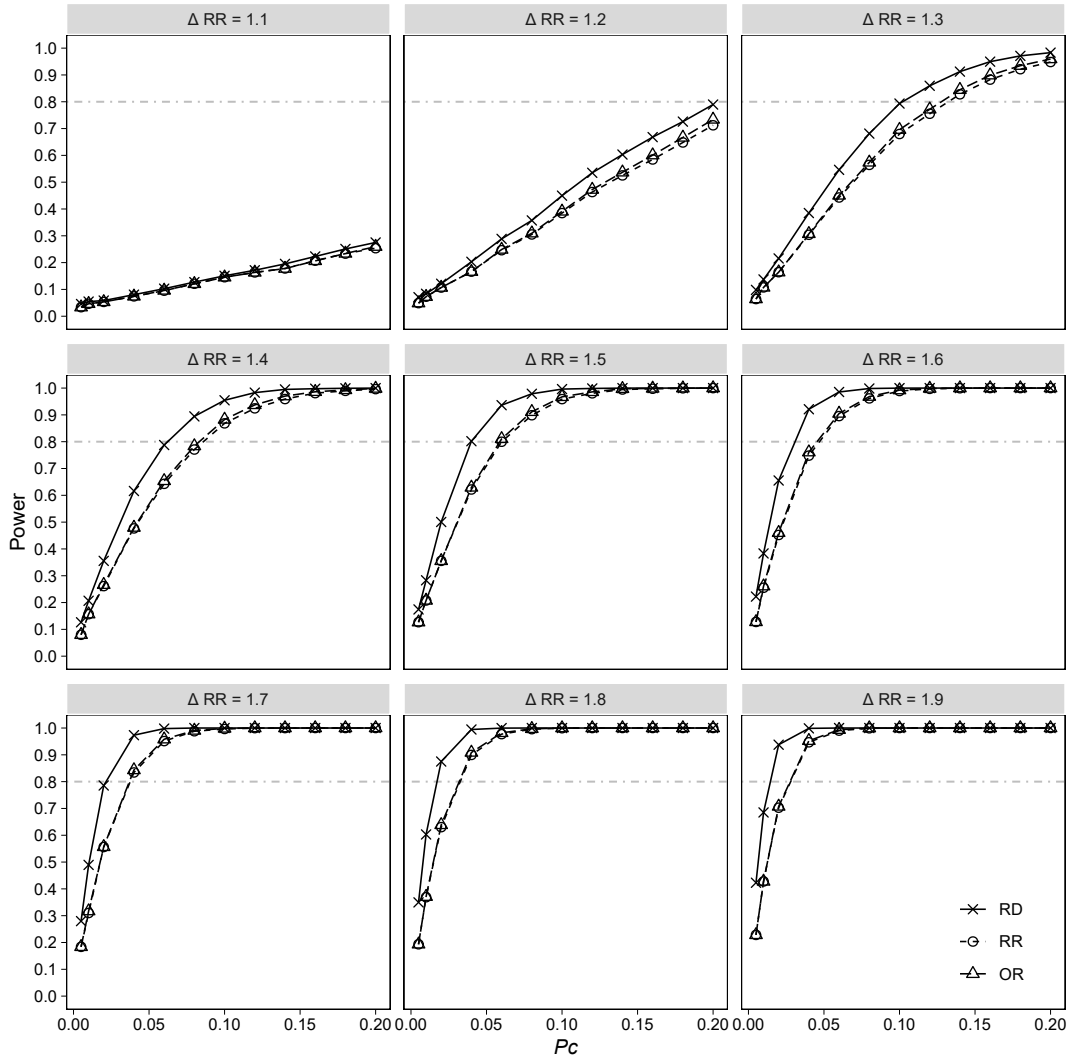

Figure S9: Power comparison of the testing NI with Wald method using RD, RR and OR metrics (sample size n=1500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power under the when $p_T = p_C$ is assumed based on 10000 simulations.

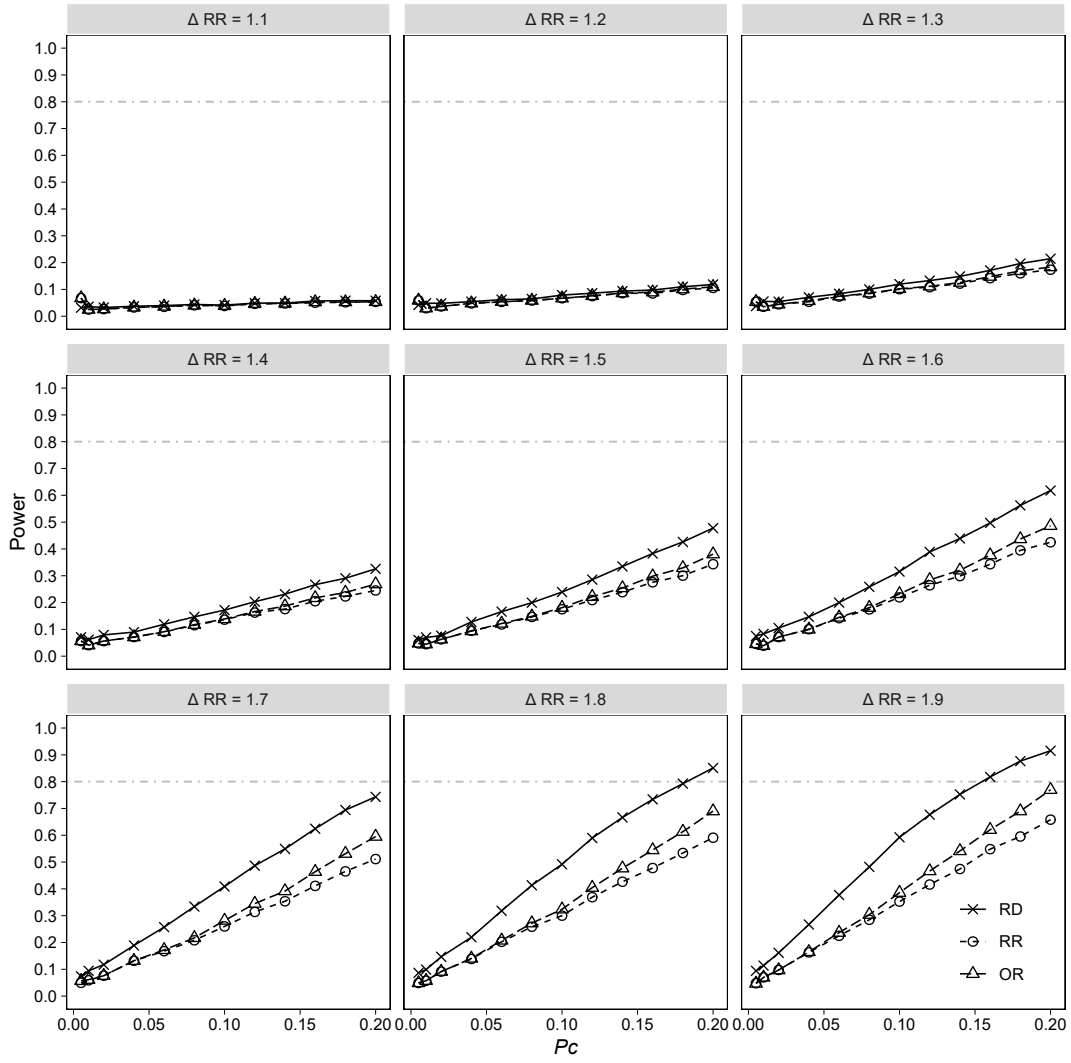

Figure S10: Power comparison of the testing NI with Wald method using RD, RR and OR metrics (sample size n=500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power when $p_T = 0.5(p_C\Delta_{RR} + p_C)$ is assumed based on 10000 simulations.

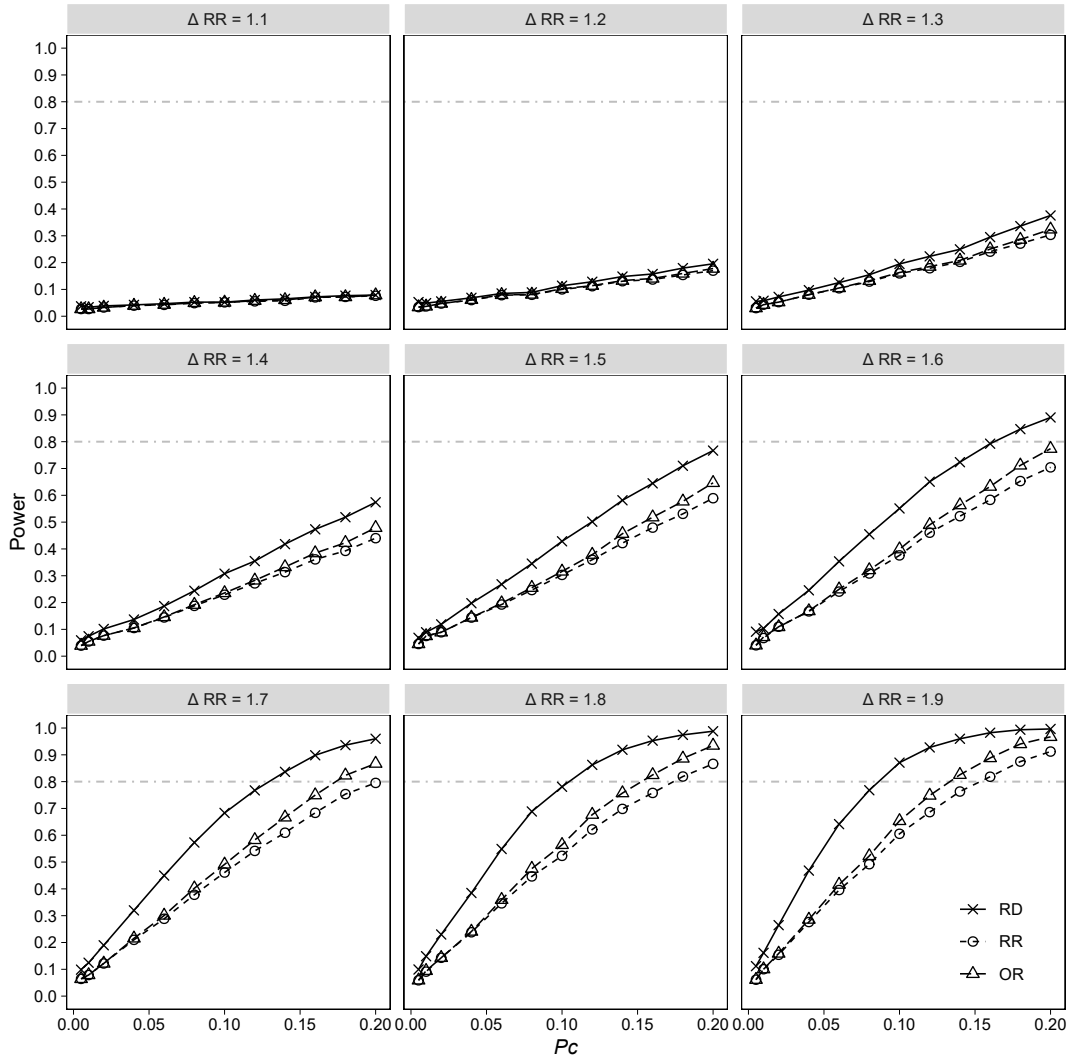

Figure S11: Power comparison of the testing NI with Wald method using RD, RR and OR metrics (sample size n=1000 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power when $p_T = 0.5(p_C\Delta_{RR} + p_C)$ is assumed based on 10000 simulations.

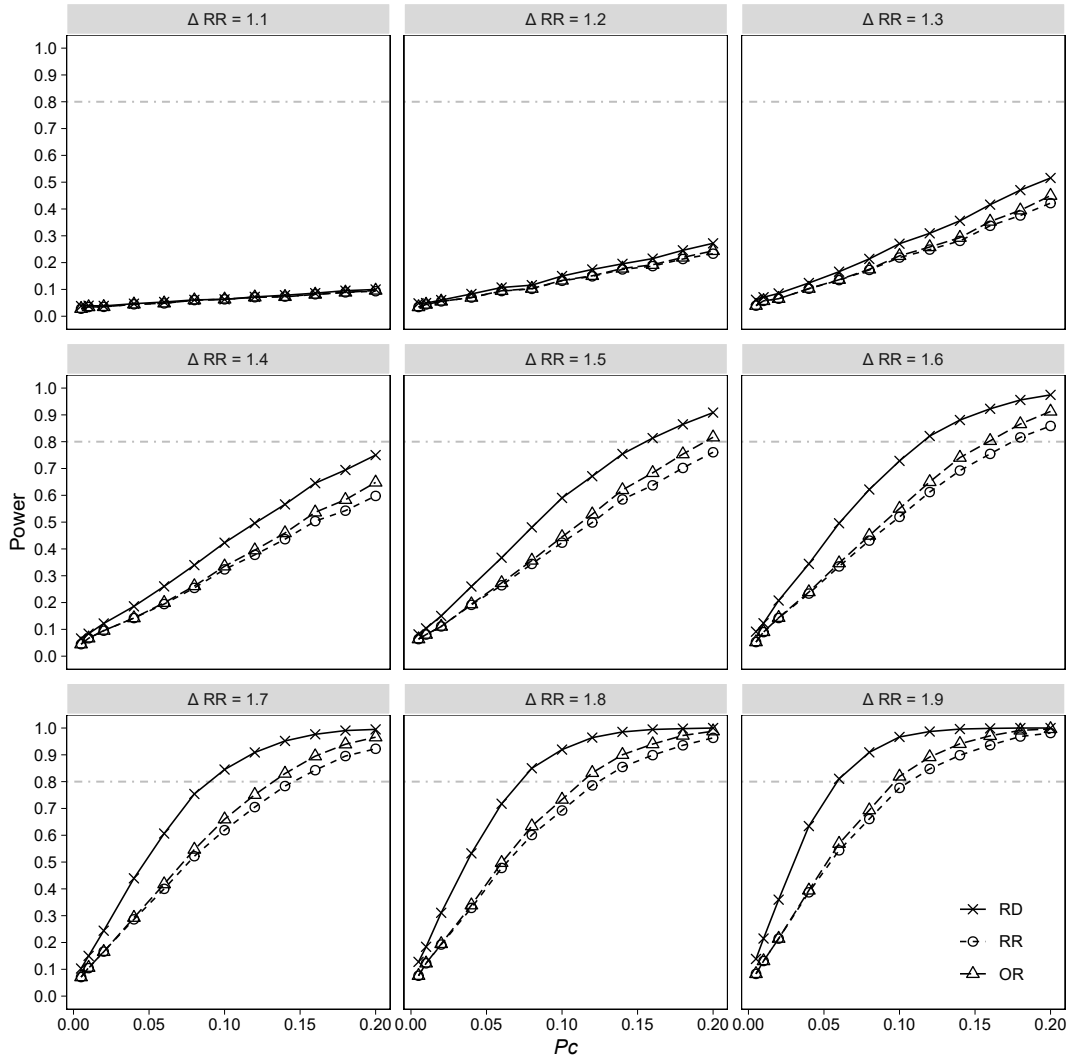

Figure S12: Power comparison of the testing NI with Wald method using RD, RR and OR metrics (sample size n=1500 for each group). The x-axis labels different values of p_C and the y-axis shows the empirical power under the when $p_T = 0.5(p_C\Delta_{RR} + p_C)$ is assumed based on 10000 simulations.

Table S2: Sample size required of Wald method for different metrics to achieve 80% power when $p_T = p_C$.

Δ_{RR}	p_C	Δ_{RD}	Δ_{OR}	n_{RD}	n_{RR}	n_{OR}	n_{RD}/n_{RR}	n_{OR}/n_{RR}	n_{RD}/n_{OR}
1.1	0.005	0.0005	1.101	312386	343885	343715	0.91	1.00	0.91
	0.01	0.0010	1.101	155408	171079	170909	0.91	1.00	0.91
	0.02	0.0020	1.102	76920	84675	84505	0.91	1.00	0.91
	0.1	0.0100	1.112	14128	15553	15383	0.91	0.99	0.92
	0.2	0.0200	1.128	6280	6913	6743	0.91	0.98	0.93
1.3	0.005	0.0015	1.302	34710	45382	45317	0.76	1.00	0.77
	0.01	0.0030	1.304	17268	22577	22512	0.76	1.00	0.77
	0.02	0.0060	1.308	8547	11175	11110	0.76	0.99	0.77
	0.1	0.0300	1.345	1570	2053	1988	0.76	0.97	0.79
	0.2	0.0600	1.405	698	913	848	0.76	0.93	0.82
1.5	0.005	0.0025	1.504	12496	19002	18957	0.66	1.00	0.66
	0.01	0.0050	1.508	6217	9453	9409	0.66	1.00	0.66
	0.02	0.0100	1.515	3077	4679	4635	0.66	0.99	0.66
	0.1	0.0500	1.588	566	860	815	0.66	0.95	0.69
	0.2	0.1000	1.714	252	382	338	0.66	0.88	0.75
1.7	0.005	0.0035	1.706	6376	11095	11059	0.57	1.00	0.58
	0.01	0.0070	1.712	3172	5520	5484	0.57	0.99	0.58
	0.02	0.0140	1.725	1570	2732	2697	0.57	0.99	0.58
	0.1	0.0700	1.843	289	502	467	0.58	0.93	0.62
	0.2	0.1400	2.061	129	224	188	0.58	0.84	0.69
1.9	0.005	0.0045	1.909	3857	7583	7552	0.51	1.00	0.51
	0.01	0.0090	1.917	1919	3773	3742	0.51	0.99	0.51
	0.02	0.0180	1.936	950	1868	1837	0.51	0.98	0.52
	0.1	0.0900	2.111	175	343	313	0.51	0.91	0.56
	0.2	0.1800	2.452	78	153	123	0.51	0.80	0.63

Table S3: Sample size required of Wald method for different metrics to achieve 80% power when $p_T = 0.5(p_C\Delta_{RR} + p_C)$.

Δ_{RR}	p_C	p_T	Δ_{RD}	Δ_{OR}	n_{RD}	n_{RR}	n_{OR}	n_{RD}/n_{RR}	n_{OR}/n_{RR}	n_{RD}/n_{OR}
1.1	0.005	0.00525	0.0005	1.101	1280616	1408940	1408226	0.91	1.00	0.91
	0.01	0.01050	0.0010	1.101	637008	700843	700130	0.91	1.00	0.91
	0.02	0.02100	0.0020	1.102	315204	346795	346082	0.91	1.00	0.91
	0.1	0.10500	0.0100	1.112	57760	63556	62845	0.91	0.99	0.92
	0.2	0.21000	0.0200	1.128	25580	28152	27443	0.91	0.97	0.93
1.3	0.005	0.00575	0.0015	1.302	149191	194202	193902	0.77	1.00	0.77
	0.01	0.01150	0.0030	1.304	74191	96579	96279	0.77	1.00	0.77
	0.02	0.02300	0.0060	1.308	36691	47768	47468	0.77	0.99	0.77
	0.1	0.11500	0.0300	1.345	6690	8718	8421	0.77	0.97	0.79
	0.2	0.23000	0.0600	1.405	2940	3837	3543	0.77	0.92	0.83
1.5	0.005	0.00625	0.0025	1.504	56191	84531	84310	0.66	1.00	0.67
	0.01	0.01250	0.0050	1.508	27935	42030	41809	0.66	0.99	0.67
	0.02	0.02500	0.0100	1.515	13807	20779	20559	0.66	0.99	0.67
	0.1	0.12500	0.0500	1.588	2504	3778	3561	0.66	0.94	0.70
	0.2	0.25000	0.1000	1.714	1091	1653	1440	0.66	0.87	0.76
1.7	0.005	0.00675	0.0035	1.706	29934	51126	50936	0.59	1.00	0.59
	0.01	0.01350	0.0070	1.712	14877	25416	25226	0.59	0.99	0.59
	0.02	0.02700	0.0140	1.725	7348	12560	12371	0.59	0.98	0.59
	0.1	0.13500	0.0700	1.843	1325	2276	2090	0.58	0.92	0.63
	0.2	0.27000	0.1400	2.061	573	991	810	0.58	0.82	0.71
1.9	0.005	0.00725	0.0045	1.909	18873	36091	35917	0.52	1.00	0.53
	0.01	0.01450	0.0090	1.917	9376	17938	17764	0.52	0.99	0.53
	0.02	0.02900	0.0180	1.936	4628	8862	8688	0.52	0.98	0.53
	0.1	0.14500	0.0900	2.111	830	1601	1431	0.52	0.89	0.58
	0.2	0.29000	0.1800	2.452	355	693	530	0.51	0.76	0.67