

# Supplementary Tables for Clark and Barr (2017): Root Mean Squared Errors of Relative Risk Estimators in Simulation Study when $n = 500$

Table 1: Root mean squared errors (RMSEs) of relative risk (RR) estimators for  $x_1 = 0.5$  vs  $x_1 = -0.5$  when  $\text{logit}(P[Y = 1]) = \alpha + \beta_1 x_1 + \beta_2 x_2$ . Sample size is 500 and  $x_1, x_2 \sim U(-2, 2)$ . *Median prob* refers to the probability that  $Y = 1$  when both covariates are at their median value. *Logit*, *log*, *poisson* and *log-logit* refer to binary regression with logit link (logistic regression) and log link, Poisson regression with log link and binary regression with blended log-logit link, respectively.

median prob.	true RR	RMSE of estimated RR				prob.reject
		logit	log	poisson	log-logit	
0.3	1.200	0.074	0.068	0.069	0.068	0.1
0.3	1.500	0.108	0.097	0.094	0.097	7.3
0.3	3.000	0.388	1.135	0.798	0.821	90.8
0.5	1.200	0.052	0.048	0.047	0.049	11.1
0.5	1.500	0.079	0.155	0.082	0.098	64.7
0.5	3.000	0.399	1.445	0.972	0.504	97.3

Table 2: Root mean squared errors (RMSEs) of relative risk (RR) estimators for  $x_1 = 2$  vs  $x_1 = 1$  when  $\text{logit}(P[Y = 1]) = \alpha + \beta_1 x_1 + \beta_2 x_2$ . Sample size is 500 and  $x_1, x_2 \sim U(-2, 2)$ . *Median prob* refers to the probability that  $Y = 1$  when both covariates are at their median value. *Logit*, *log*, *poisson* and *log-logit* refer to binary regression with logit link (logistic regression) and log link, Poisson regression with log link and binary regression with blended log-logit link, respectively.

median prob.	true RR	RMSE of estimated RR				prob.reject
		logit	log	poisson	log-logit	
0.3	1.173	0.054	0.071	0.073	0.071	0.1
0.3	1.332	0.045	0.141	0.159	0.142	7.3
0.3	1.346	0.040	0.528	0.874	0.332	90.8
0.5	1.098	0.020	0.460	0.937	0.042	97.3
0.5	1.143	0.025	0.053	0.067	0.059	11.1
0.5	1.206	0.017	0.153	0.242	0.160	64.7

Table 3: Root mean squared errors (RMSEs) of relative risk (RR) estimators for  $x_1 = -1$  vs  $x_1 = -2$  when  $\text{logit}(P[Y = 1]) = \alpha + \beta_1 x_1 + \beta_2 x_2$ . Sample size is 500 and  $x_1, x_2 \sim U(-2, 2)$ . *Median prob* refers to the probability that  $Y = 1$  when both covariates are at their median value. *Logit*, *log*, *poisson* and *log-logit* refer to binary regression with logit link (logistic regression) and log link, Poisson regression with log link and binary regression with blended log-logit link, respectively.

median prob.	true RR	RMSE of estimated RR				prob.reject
		logit	log	poisson	log-logit	
0.3	1.224	0.092	0.074	0.074	0.074	0.1
0.3	1.634	0.157	0.204	0.190	0.204	7.3
0.3	4.583	0.747	2.716	2.375	2.394	90.8
0.5	1.260	0.082	0.094	0.082	0.091	11.1
0.5	1.865	0.183	0.515	0.428	0.446	64.7
0.5	8.200	1.969	6.644	6.169	5.623	97.3

Table 4: Root mean squared errors (RMSEs) of relative risk (RR) estimators for  $x_1 = 0.5$  vs  $x_1 = -0.5$  when  $\text{logit}(P[Y = 1]) = \alpha + \beta_1 x_1 + \beta_2 x_2$ . Sample size is 500 and  $x_1, x_2 \sim N(0, \frac{4}{3})$ . *Median prob* refers to the probability that  $Y = 1$  when both covariates are at their median value. *Logit*, *log*, *poisson* and *log-logit* refer to binary regression with logit link (logistic regression) and log link, Poisson regression with log link and binary regression with blended log-logit link, respectively.

median prob.	true RR	RMSE of estimated RR				prob.reject
		logit	log	poisson	log-logit	
0.3	1.200	0.076	0.064	0.068	0.068	0.9
0.3	1.500	0.112	0.193	0.101	0.121	22.1
0.3	3.000	0.429	1.612	1.090	0.840	89.4
0.5	1.200	0.054	0.097	0.047	0.051	19.2
0.5	1.500	0.084	0.282	0.113	0.112	64.1
0.5	3.000	0.408	1.749	1.233	0.504	94.3

Table 5: Root mean squared errors (RMSEs) of relative risk (RR) estimators for  $x_1 = 2$  vs  $x_1 = 1$  when  $\text{logit}(P[Y = 1]) = \alpha + \beta_1 x_1 + \beta_2 x_2$ . Sample size is 500 and  $x_1, x_2 \sim N(0, \frac{4}{3})$ . *Median prob* refers to the probability that  $Y = 1$  when both covariates are at their median value. *Logit*, *log*, *poisson* and *log-logit* refer to binary regression with logit link (logistic regression) and log link, Poisson regression with log link and binary regression with blended log-logit link, respectively.

median prob.	true RR	RMSE of estimated RR				prob.reject
		logit	log	poisson	log-logit	
0.3	1.173	0.055	0.057	0.070	0.068	0.9
0.3	1.332	0.046	0.066	0.126	0.109	22.1
0.3	1.346	0.040	0.081	0.576	0.290	89.4
0.5	1.098	0.020	0.160	0.675	0.047	94.3
0.5	1.143	0.026	0.048	0.061	0.055	19.2
0.5	1.206	0.018	0.041	0.197	0.148	64.1

Table 6: Root mean squared errors (RMSEs) of relative risk (RR) estimators for  $x_1 = -1$  vs  $x_1 = -2$  when  $\text{logit}(P[Y = 1]) = \alpha + \beta_1 x_1 + \beta_2 x_2$ . Sample size is 500 and  $x_1, x_2 \sim N(0, \frac{4}{3})$ . *Median prob* refers to the probability that  $Y = 1$  when both covariates are at their median value. *Logit*, *log*, *poisson* and *log-logit* refer to binary regression with logit link (logistic regression) and log link, Poisson regression with log link and binary regression with blended log-logit link, respectively.

median prob.	true RR	RMSE of estimated RR				prob.reject
		logit	log	poisson	log-logit	
0.3	1.224	0.093	0.078	0.075	0.076	0.9
0.3	1.634	0.162	0.323	0.215	0.239	22.1
0.3	4.583	0.855	3.195	2.670	2.408	89.4
0.5	1.260	0.086	0.154	0.087	0.095	19.2
0.5	1.865	0.197	0.646	0.471	0.461	64.1
0.5	8.200	2.089	6.948	6.431	5.624	94.3