4. Results

Contents

A summary is shown in Table 1 and 2

Table 1: Summary of 1000 Simulated Mendelian Randomisation Studies With Null Causal Effect

N	Proportion of Invalid IVs	F	R^2	Weighted Median		MR Hevo	
				Mean Estimate (Mean SE)	Positive Rate	Mean Estimate (Mean SE)	Positive Rate
Scenario 1: Balanced pleiotropy, InSIDE assumption satisfied							
10,000	0.1	11.0	2.7%	-0.050 (0.095)	0.000	-0.044 (0.001)	0.000
10,000	0.2	7.9	1.9%	-0.075 (0.099)	0.000	-0.026 (0.001)	0.000
10,000	0.3	9.8	2.4%	-0.048 (0.104)	0.000	0.042 (0.003)	0.000
20,000	0.1	14.8	1.8%	-0.027 (0.08)	0.000	0.000 (0.001)	0.000
20,000	0.2	19.5	2.4%	-0.023 (0.083)	0.000	-0.041 (0.001)	0.000
20,000	0.3	21.6	2.6%	-0.033 (0.079)	0.000	-0.033 (0.001)	0.000
Scenario 2: Directional pleiotropy, InSIDE assumption satisfied							
10,000	0.1	11.0	2.7%	-0.050 (0.094)	0.000	-0.048 (0.001)	0.000
10,000	0.2	7.9	1.9%	-0.072 (0.105)	0.000	-0.005 (0.002)	0.000
10,000	0.3	9.8	2.4%	-0.012 (0.103)	0.000	0.111 (0.003)	0.000
20,000	0.1	14.8	1.8%	-0.024 (0.078)	0.000	0.011 (0.001)	0.000
20,000	0.2	19.5	2.4%	0.014 (0.08)	0.000	0.027 (0.001)	0.000
20,000	0.3	21.6	2.6%	0.009 (0.079)	0.000	0.047 (0.002)	0.000
Scenario 3: Directional pleiotropy, InSIDE assumption not satisfied							
10,000	0.1	9.4	2.3%	-0.010 (0.096)	0.000	-0.031 (0.001)	0.000
10,000	0.2	8.9	2.2%	0.073 (0.116)	0.000	0.022 (0.001)	0.000
10,000	0.3	13.3	3.2%	0.519 (0.127)	0.667	0.482 (0.006)	0.333
20,000	0.1	18.1	2.2%	0.085 (0.091)	0.000	0.003 (0.001)	0.000
20,000	0.2	29.9	3.6%	0.415 (0.104)	1.000	0.278 (0.005)	0.333
20,000	0.3	23.2	2.8%	0.331 (0.095)	0.667	0.332 (0.005)	0.333

IV: Instumental Variable, SE: Standard Error
Data from 1000 Simulated Mendelian Randomisation Studies
Positive Causal Effect (β = 0)

Table 2: Summary of 1000 Simulated Mendelian Randomisation Studies With Positive Causal Effect (= 0.1)

N	Proportion of Invalid IVs	F	R^2	Weighted Median		MR Hevo	
				Mean Estimate (Mean SE)	Positive Rate	Mean Estimate (Mean SE)	Positive Rate
Scenario 1: Balanced pleiotropy, InSIDE assumption satisfied							
10,000	0.1	11.0	2.7%	-0.050 (0.095)	0.000	-0.044 (0.001)	0.000
10,000	0.2	7.9	1.9%	-0.075 (0.099)	0.000	-0.026 (0.001)	0.000
10,000	0.3	9.8	2.4%	-0.048 (0.104)	0.000	0.042 (0.003)	0.000
20,000	0.1	14.8	1.8%	-0.027 (0.08)	0.000	0.000 (0.001)	0.000
20,000	0.2	19.5	2.4%	-0.023 (0.083)	0.000	-0.041 (0.001)	0.000
20,000	0.3	21.6	2.6%	-0.033 (0.079)	0.000	-0.033 (0.001)	0.000
Scenario 2: Directional pleiotropy, InSIDE assumption satisfied							
10,000	0.1	11.0	2.7%	-0.050 (0.094)	0.000	-0.048 (0.001)	0.000
10,000	0.2	7.9	1.9%	-0.072 (0.105)	0.000	-0.005 (0.002)	0.000
10,000	0.3	9.8	2.4%	-0.012 (0.103)	0.000	0.111 (0.003)	0.000
20,000	0.1	14.8	1.8%	-0.024 (0.078)	0.000	0.011 (0.001)	0.000
20,000	0.2	19.5	2.4%	0.014 (0.08)	0.000	0.027 (0.001)	0.000
20,000	0.3	21.6	2.6%	0.009 (0.079)	0.000	0.047 (0.002)	0.000
Scenario 3: Directional pleiotropy, InSIDE assumption not satisfied							
10,000	0.1	9.4	2.3%	-0.010 (0.096)	0.000	-0.031 (0.001)	0.000
10,000	0.2	8.9	2.2%	0.073 (0.116)	0.000	0.022 (0.001)	0.000
10,000	0.3	13.3	3.2%	0.519 (0.127)	0.667	0.482 (0.006)	0.333
20,000	0.1	18.1	2.2%	0.085 (0.091)	0.000	0.003 (0.001)	0.000
20,000	0.2	29.9	3.6%	0.415 (0.104)	1.000	0.278 (0.005)	0.333
20,000	0.3	23.2	2.8%	0.331 (0.095)	0.667	0.332 (0.005)	0.333

IV: Instumental Variable, SE: Standard Error
Data from 1000 Simulated Mendelian Randomisation Studies
Positive Causal Effect (β = 0.1)

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