4. Results

Contents

A summary is shown in Table 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	0.0	10.9	2.7%	0.002 (0.078)	0.3	0.000 (0.001)	93.9
10,000	0.1	11.7	2.8%	0.026 (0.086)	1.5	0.032 (0.001)	96.2
10,000	0.2	11.7	2.8%	0.022 (0.092)	2.0	0.037 (0.002)	96.2
10,000	0.3	11.7	2.8%	0.014 (0.093)	1.9	0.022 (0.002)	94.3

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

Table 2: Summary of 1000 Simulated Mendelian Randomisation Studies With Positive 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	0.0	10.9	2.7%	0.072 (0.079)	6.8	0.084 (0.001)	100.0
10,000	0.1	11.7	2.8%	0.094 (0.087)	10.8	0.118 (0.001)	100.0
10,000	0.2	11.7	2.8%	0.089 (0.093)	10.1	0.124 (0.002)	99.7
10,000	0.3	11.7	2.8%	0.081 (0.094)	8.8	0.108 (0.002)	98.6
Scenario 2: Directional pleiotropy, InSIDE assumption satisfied							
10,000	0.0	10.9	2.7%	0.072 (0.079)	6.3	0.084 (0.001)	100.0
10,000	0.1	11.7	2.8%	0.089 (0.088)	8.4	0.124 (0.001)	99.9
10,000	0.2	11.7	2.8%	0.119 (0.094)	17.5	0.187 (0.002)	100.0
10,000	0.3	11.7	2.8%	0.133 (0.095)	23.7	0.216 (0.002)	100.0
Scenario 3: Directional pleiotropy, InSIDE assumption not satisfied							
10,000	0.0	10.9	2.7%	0.072 (0.079)	6.7	0.084 (0.001)	100.0
10,000	0.1	13.7	3.3%	0.150 (0.089)	33.8	0.137 (0.001)	100.0
10,000	0.2	14.9	3.6%	0.213 (0.1)	55.0	0.202 (0.002)	100.0
10,000	0.3	12.8	3.1%	0.169 (0.099)	37.0	0.191 (0.002)	100.0

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

Table reference[1]

Word count: 17

1. Bowden J, Smith GD, Haycock PC, Burgess S. Consistent Estimation in Mendelian Randomization with Some Invalid Instruments Using a Weighted Median Estimator. Genetic Epidemiology [Internet]. 2016 Apr [cited 2024 Oct 22];40(4):304. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC4849733/