Results

Descriptive Statistics

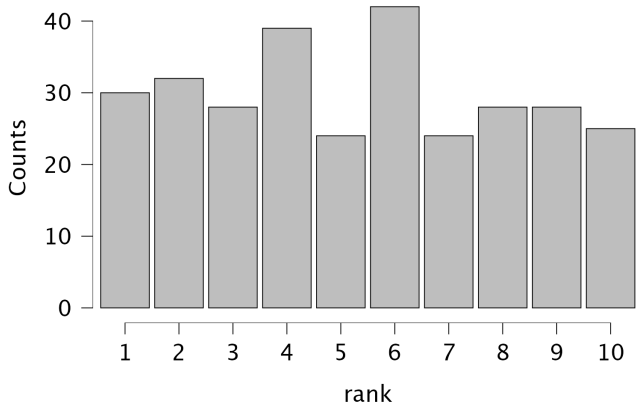
Descriptive Statistics

		Valid	Missing	Mean	Std. Deviation	Variance	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Shapiro-Wilk	P-value
rank	gbest	300	0	5.333	2.803	7.855	0.077	0.141	−1.150	0.281	0.941	
rank	ibest	300	0	5.380	2.841	8.069	0.037	0.141	−1.164	0.281	0.938	
rank	pbest	300	0	5.397	2.906	8.447	0.028	0.141	−1.215	0.281	0.932	
rank	rbest	300	0	5.387	2.802	7.850	0.027	0.141	−1.128	0.281	0.942	
rank	symmetric	300	0	5.670	2.842	8.075	−0.020	0.141	−1.236	0.281	0.935	

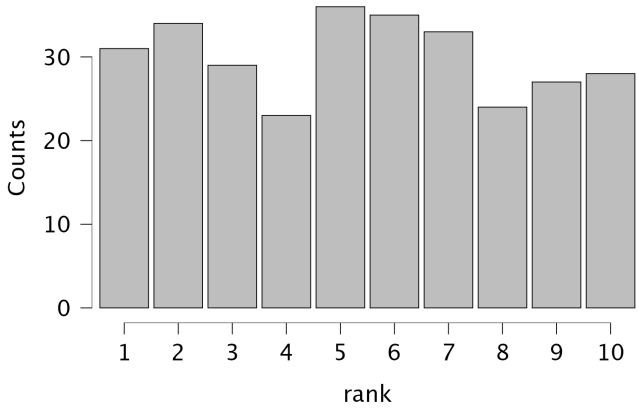
Distribution Plots

rank

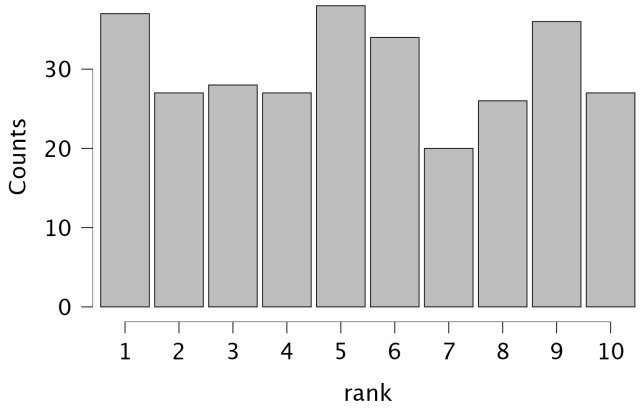
gbest



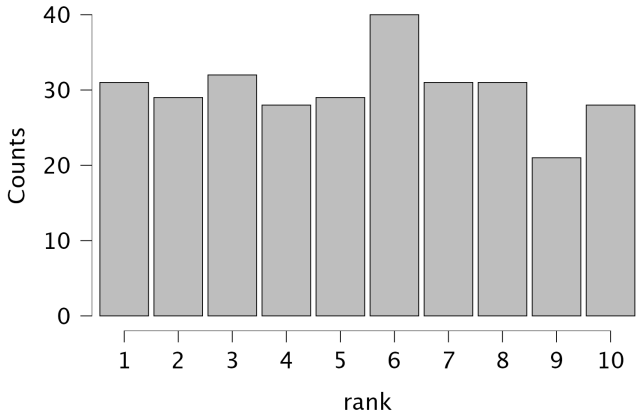
ibest



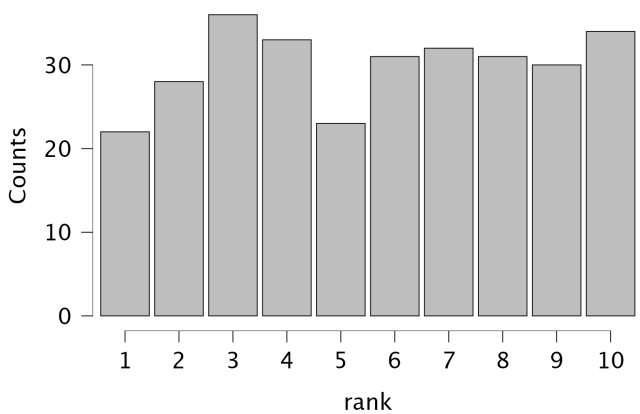
pbest



rbest

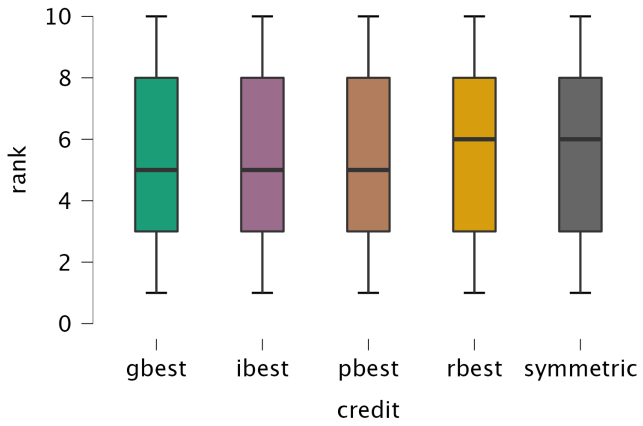


symmetric



Boxplots

rank



ANOVA

ANOVA - rank

Cases	Sum of Squares	df	Mean Square	F	p
heuristic	3110.400	1	3110.400	519.771	< .001
credit	21.713	4	5.428	0.907	0.459
heuristic ✻ credit	21.793	4	5.448	0.910	0.457
Residuals	8916.427	1490	5.984		

Note. Type III Sum of Squares

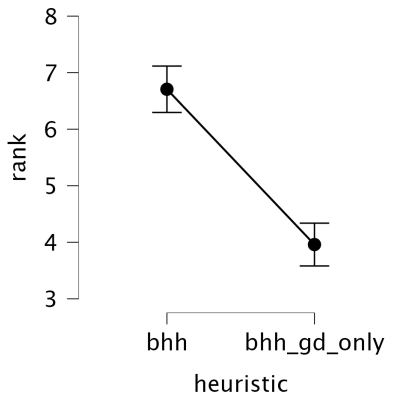
Descriptives

Descriptives - rank

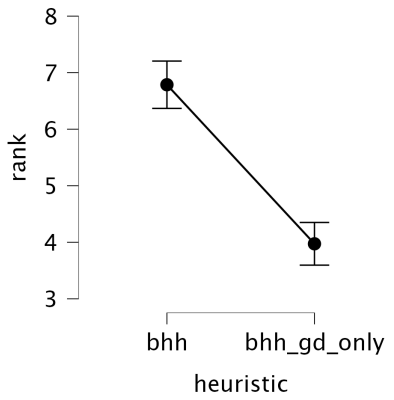
heuristic	credit	Mean	SD	N
bhh	gbest	6.707	2.542	150
	ibest	6.787	2.595	150
	pbest	6.927	2.531	150
	rbest	6.660	2.546	150
	symmetric	7.287	2.392	150
bhh_gd_only	gbest	3.960	2.346	150
	ibest	3.973	2.340	150
	pbest	3.867	2.415	150
	rbest	4.113	2.451	150
	symmetric	4.053	2.284	150

Descriptives plots

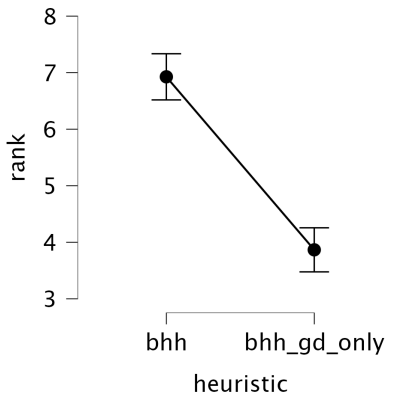
credit: gbest



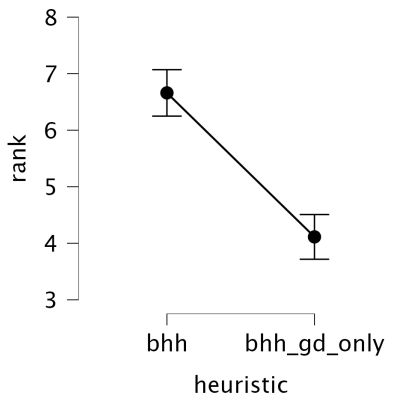
credit: ibest



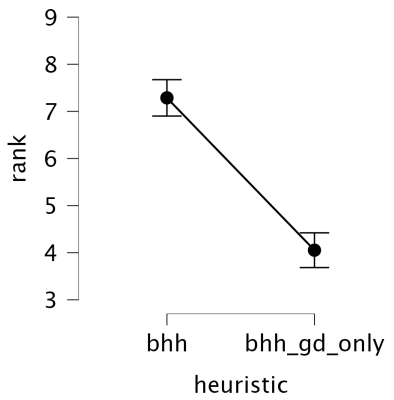
credit: pbest



credit: rbest

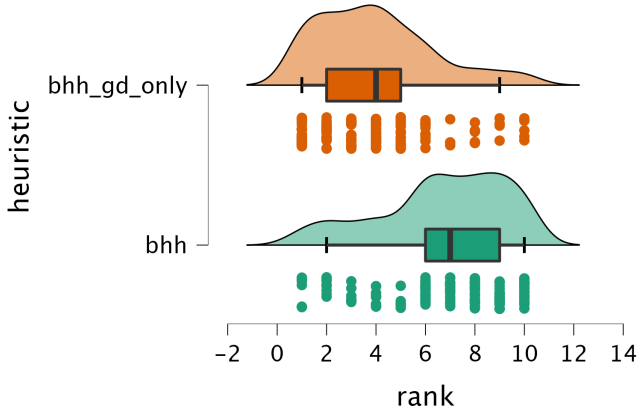


credit: symmetric

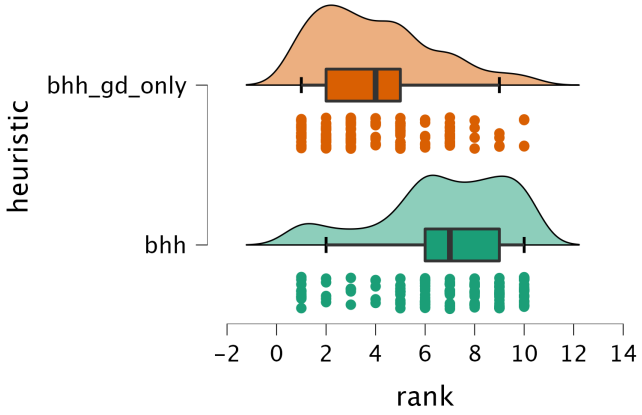


Raincloud plots

credit: gbest



credit: ibest



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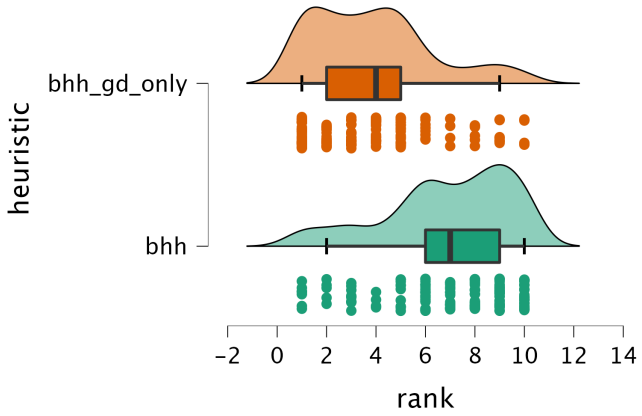
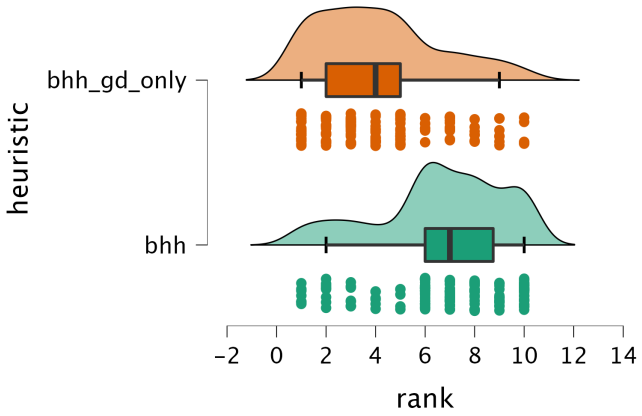
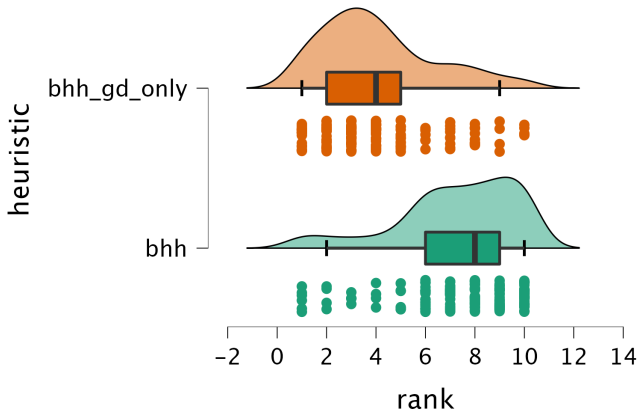


credit: rbest



credit: symmetric



Assumption Checks

Test for Equality of Variances (Levene's)

F	df1	df2	p
0.788	9.000	1490.000	0.627

Post Hoc Tests

Standard

Post Hoc Comparisons - heuristic

			95% CI for Mean Difference				
		Mean Difference	Lower	Upper	SE	t	p_{tukey}
bhh	bhh_gd_only	2.880	2.632	3.128	0.126	22.798	< .001***

Note. Results are averaged over the levels of: credit
*** p < .001

Post Hoc Comparisons - credit

			95% CI for Mean Difference				
		Mean Difference	Lower	Upper	SE	t	p_{tukey}
gbest	ibest	−0.047	−0.592	0.499	0.200	−0.234	0.999
	pbest	−0.063	−0.609	0.482	0.200	−0.317	0.998
	rbest	−0.053	−0.599	0.492	0.200	−0.267	0.999
	symmetric	−0.337	−0.882	0.209	0.200	−1.686	0.443
ibest	pbest	−0.017	−0.562	0.529	0.200	−0.083	1.000
	rbest	−0.007	−0.552	0.539	0.200	−0.033	1.000
	symmetric	−0.290	−0.836	0.256	0.200	−1.452	0.594
pbest	rbest	0.010	−0.536	0.556	0.200	0.050	1.000
	symmetric	−0.273	−0.819	0.272	0.200	−1.368	0.648
rbest	symmetric	−0.283	−0.829	0.262	0.200	−1.419	0.616

Note. P-value and confidence intervals adjusted for comparing a family of 5 estimates (confidence intervals corrected using the tukey method).
Note. Results are averaged over the levels of: heuristic

Kruskal-Wallis Test

Kruskal-Wallis Test

Factor	Statistic	df	p
heuristic	390.388	1	< .001
credit	2.681	4	0.612