

Wilcoxon Rank-Sum Test

Standalone verified Python analysis

Test: Wilcoxon Rank-Sum Test

Design: Independent-sample rank-sum comparison of G1 between GP and MS schools.

Variables: G1, school

Null hypothesis: The two school distributions have equal location under common shape.

Formula: $W_{GP} = \text{sum of pooled midranks}$; $U = W_{GP} - n_{GP}(n_{GP} + 1)/2$

Source rows: 649

Calculated metrics:

gp_rank_sum: 154877.0

u_equivalent: 65201.0

p_value: 1.4239582478483665e-14

probability_superiority_gp_over_ms: 0.682033096926714

Independent reference values:

gp_rank_sum: 154877.0

u_equivalent: 65201.0

p_value: 1.4239582478483665e-14

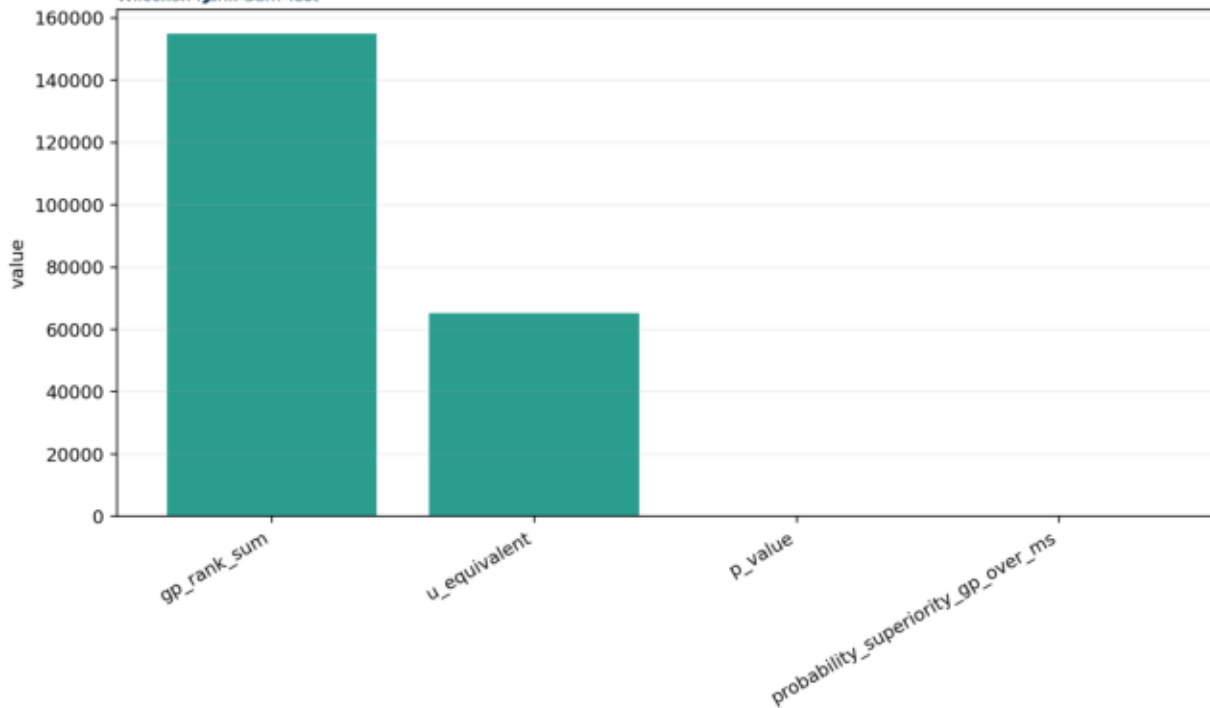
probability_superiority_gp_over_ms: 0.682033096926714

Interpretation:

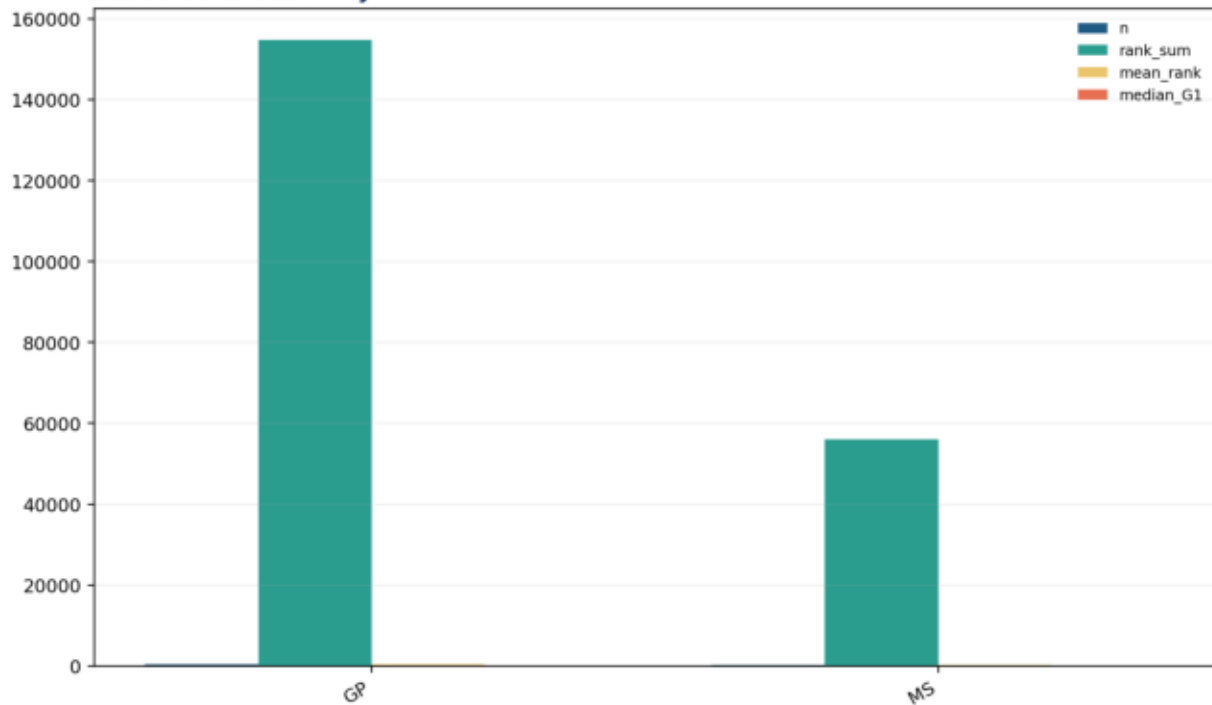
The Wilcoxon W rank sum and Mann-Whitney U are shown through their exact algebraic identity.

This folder uses G1 by school, not the G3-by-internet design of the Mann-Whitney transcript.

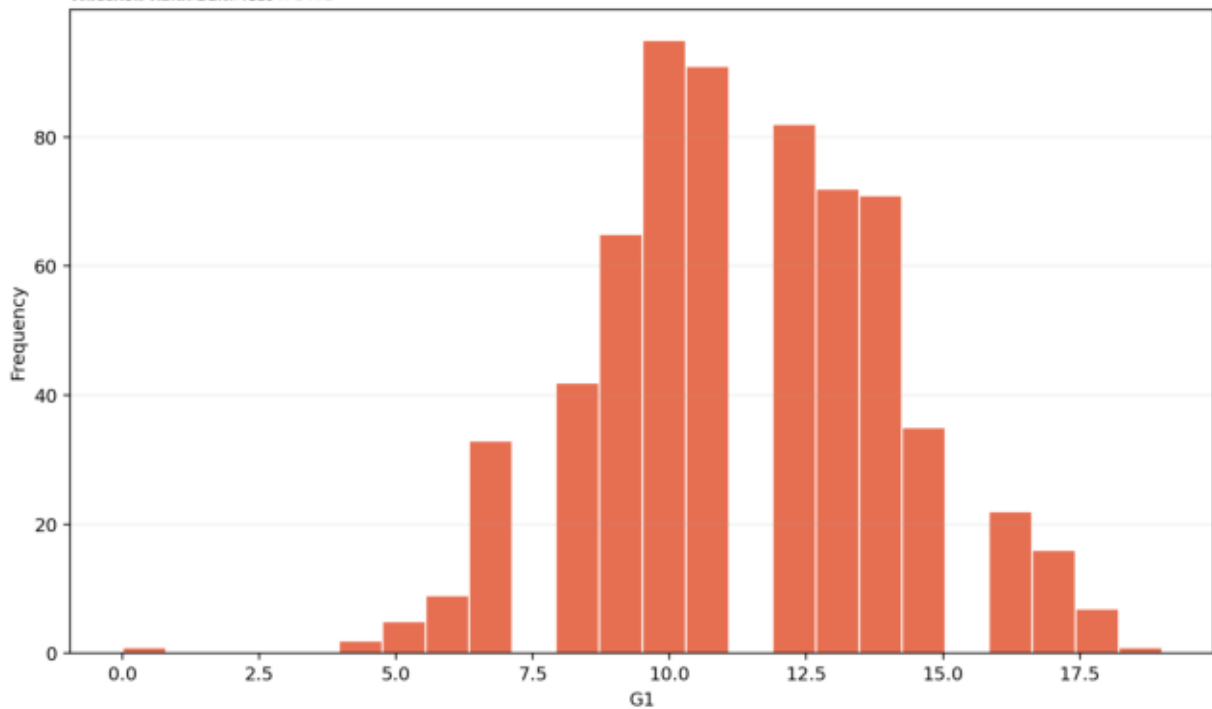
Primary Metrics



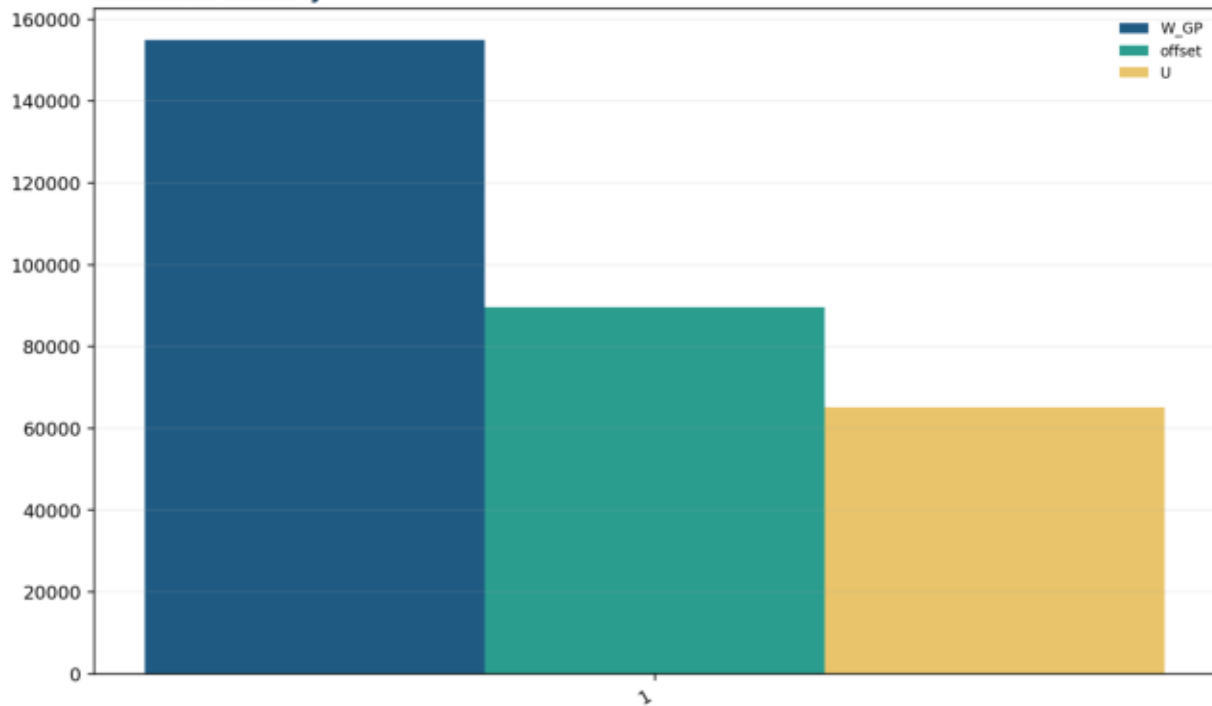
SchoolRank Summary



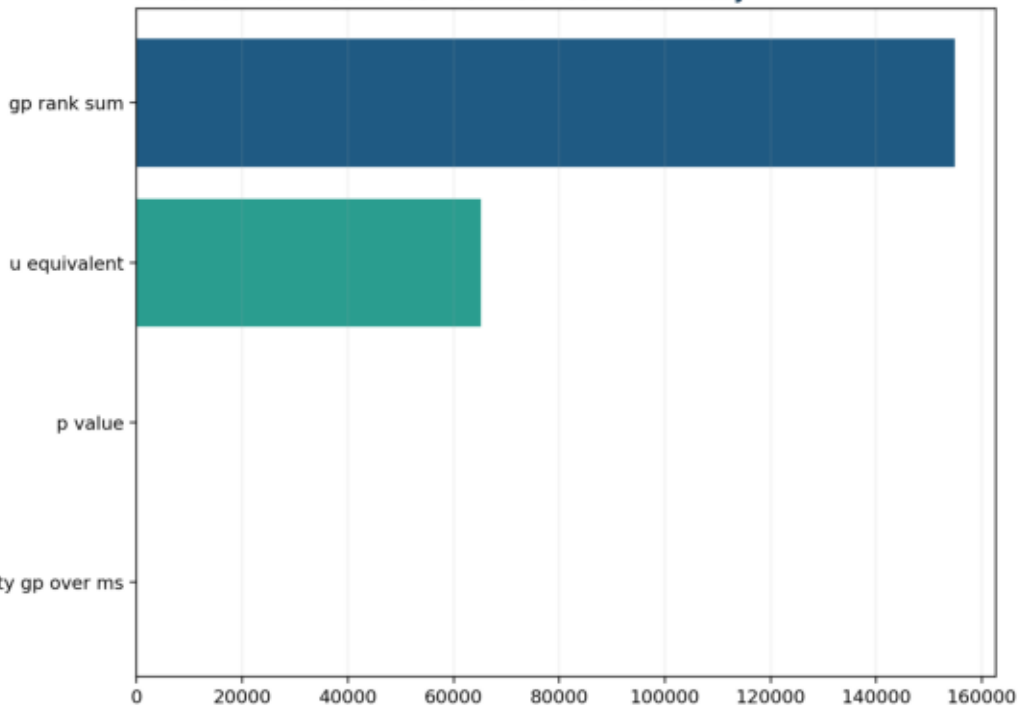
Ranked Observations



RankSum-Identity



Wilcoxon Rank-Sum Test verified result summary



Primary Metrics

metric	value
gp_rank_sum	154877
u_equivalent	65201
p_value	1.42396e-14
probability_superiority_gp_over_ms	0.682033

School Rank Summary

school	n	rank_sum	mean_rank	median_G1
GP	423	154877	366.139	12
MS	226	56048	248	10

Ranked Observations

school	G1	rank
GP	0	1
GP	9	125
GP	12	384.5
GP	14	533
GP	11	298
GP	12	384.5
GP	13	461.5
GP	10	205
GP	15	586
GP	12	384.5
GP	14	533
GP	10	205
GP	12	384.5
GP	12	384.5
GP	14	533
GP	17	633.5
GP	13	461.5
GP	13	461.5
GP	8	71.5
GP	12	384.5
GP	12	384.5
GP	11	298
GP	12	384.5
GP	10	205
GP	10	205
GP	10	205

Rank Sum Identity

W_GP	offset	U
154877	89676	65201