

Page's Ordered Alternatives Test

Standalone verified Python analysis

Test: Page's Ordered Alternatives Test

Design: Within-student ordered trend from G1 to G2 to G3.

Variables: G1, G2, G3 ordered occasions

Null hypothesis: There is no ordered increase across the three grade occasions.

Formula: $L = \sum_j j R_j$ for prespecified treatment order; the upper tail is evaluated under blockwise exchangeability.

Source rows: 649

Calculated metrics:

l _statistic: 8164.0

p_value: 8.455586252897959e-26

method: asymptotic

n_blocks: 649

k_occasions: 3

Independent reference values:

l _statistic: 8164.0

p_value: 8.455586252897959e-26

method: asymptotic

n_blocks: 649

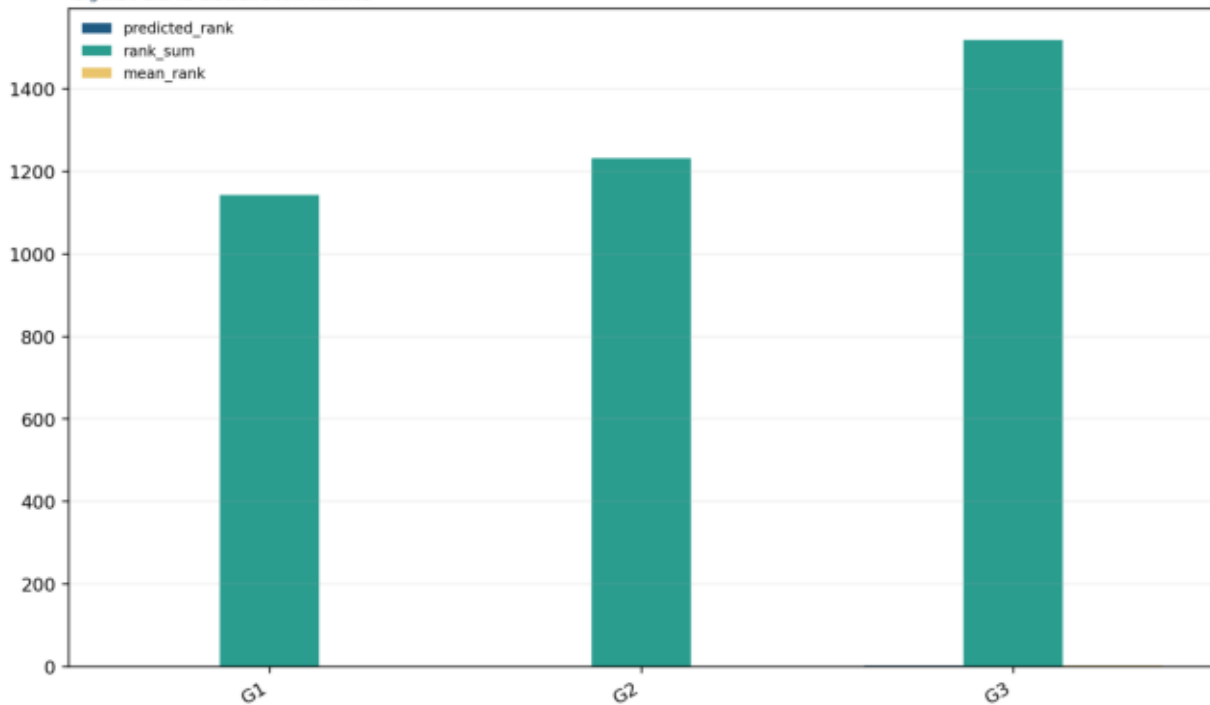
k_occasions: 3

Interpretation:

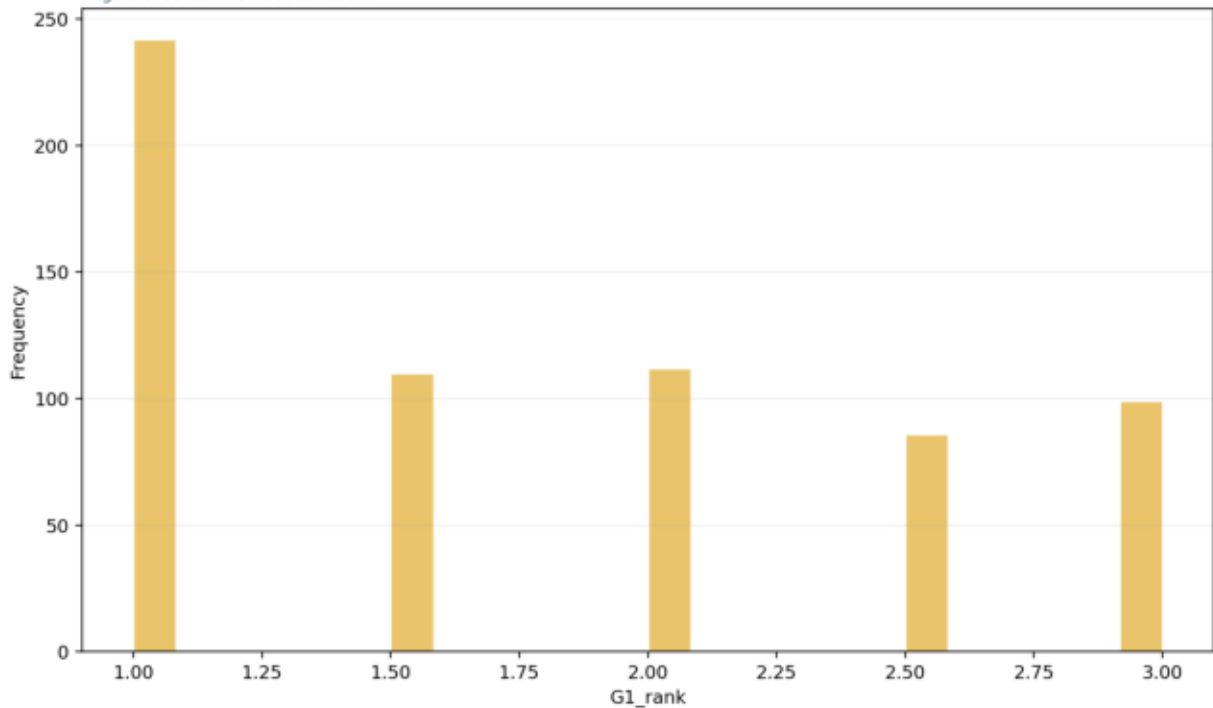
The G1-to-G3 order was specified before testing, so the alternative is directional.

Page $L=8164.000000$, one-sided $p=8.45559e-26$.

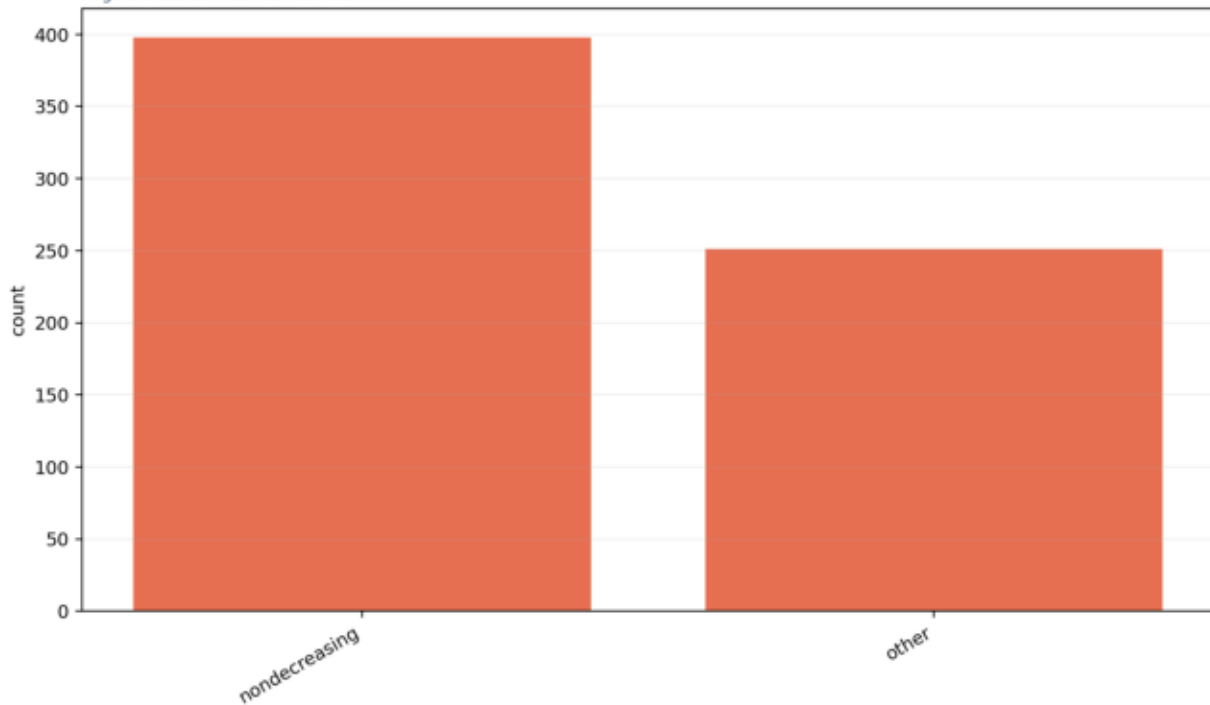
Ordered Occasion Ranks



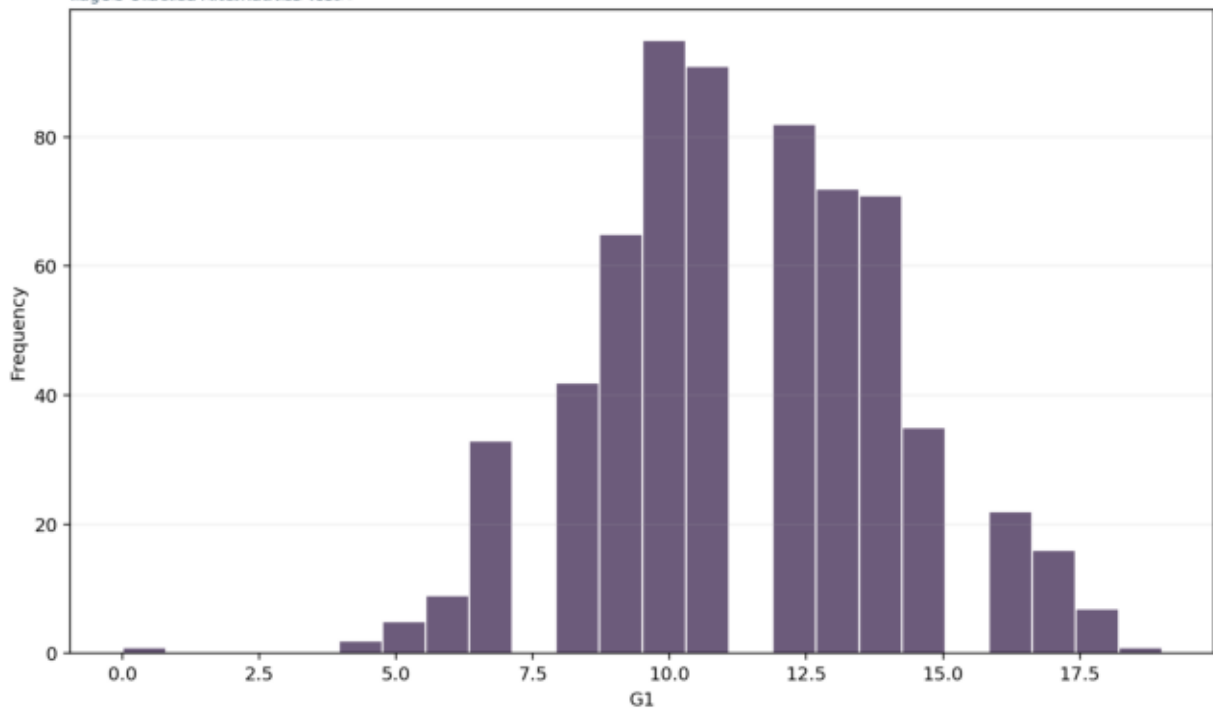
Student Ordered Ranks



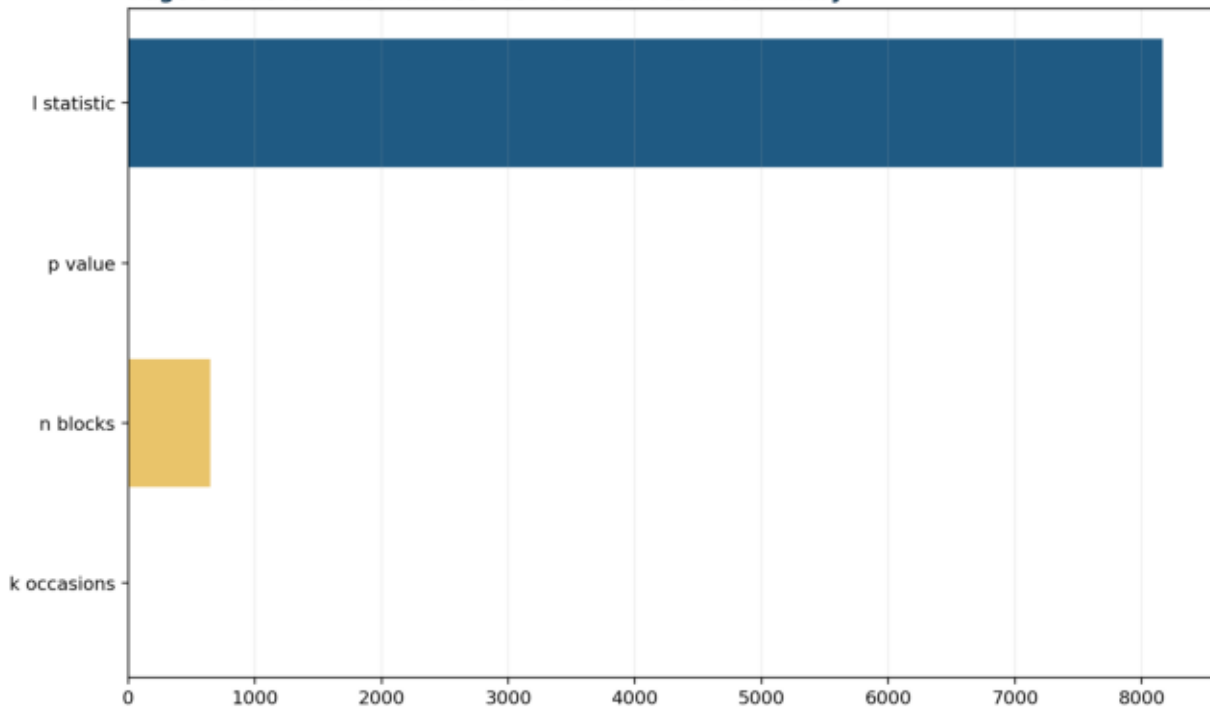
Monotone Pattern Counts



Source: G1 Distribution



Page's Ordered Alternatives Test verified result summary



Primary Metrics

metric	value
l_statistic	8164
p_value	8.45559e-26
method	asymptotic
n_blocks	649
k_occasions	3

Ordered Occasion Ranks

occasion	predicted_rank	rank_sum	mean_rank
G1	1	1143	1.76117
G2	2	1232	1.89831
G3	3	1519	2.34052

Student Ordered Ranks

G1_rank	G2_rank	G3_rank
1	2.5	2.5
1	2.5	2.5
1.5	3	1.5
2	2	2
1	2.5	2.5
1.5	1.5	3
2.5	1	2.5
1	2.5	2.5
1	2	3
1.5	1.5	3
2	2	2
1	2	3
1.5	3	1.5
1.5	1.5	3
1.5	1.5	3
2	2	2
1.5	1.5	3
1	2.5	2.5
2.5	2.5	1
2	2	2
1	2	3
1	2.5	2.5
1	2	3
2	2	2
1.5	3	1.5
1	2	3

Monotone Pattern Counts

pattern	count
nondecreasing	398
other	251