

Kuder-Richardson Formula 21

Standalone verified Python analysis

Test: Kuder-Richardson Formula 21

Design: Equal-difficulty approximation for the same six binary support/intention items.

Variables: schoolsup, famsup, paid, activities, higher, internet

Null hypothesis: The equal-difficulty binary composite has no internal-consistency reliability.

Formula: $KR-21 = k / (k-1) [1 - M(k-M) / (k s_{total}^2)]$.

Source rows: 649

Calculated metrics:

kr21: -0.42506689158879823

items: 6

n_cases: 649

mean_test_score: 2.9244992295839753

total_score_variance: 1.1069451577926155

Independent reference values:

kr21: -0.42506689158879823

items: 6

n_cases: 649

mean_test_score: 2.9244992295839753

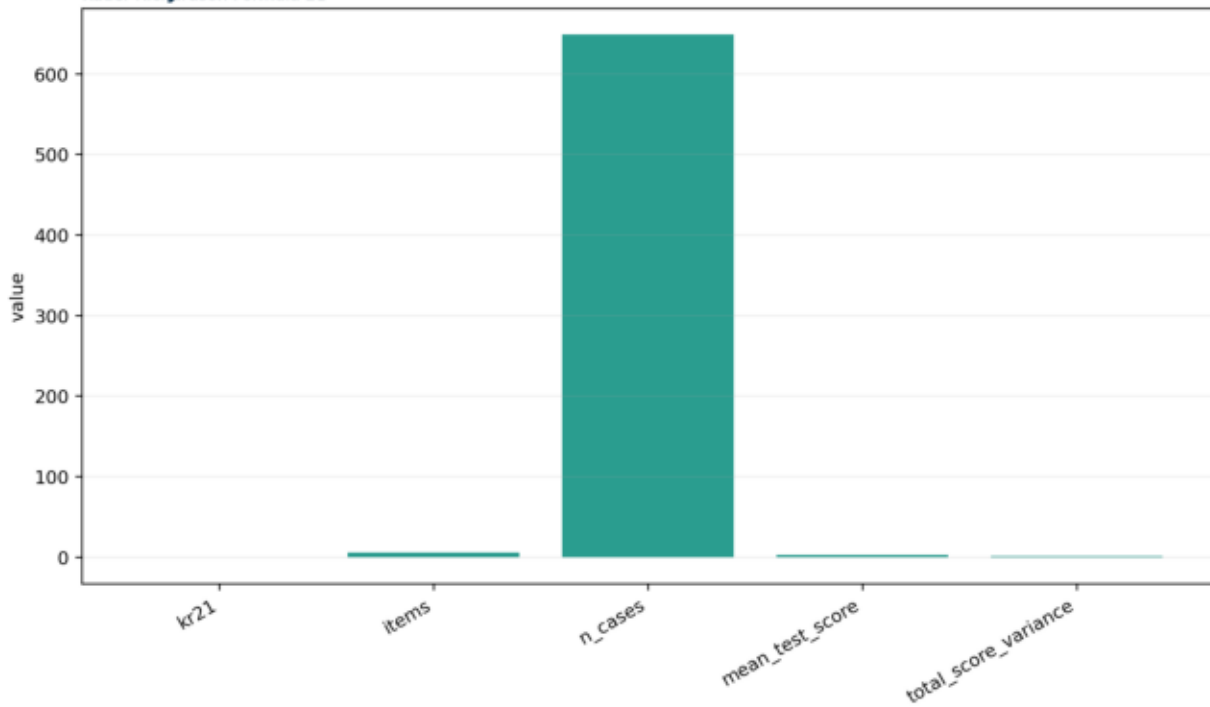
total_score_variance: 1.1069451577926155

Interpretation:

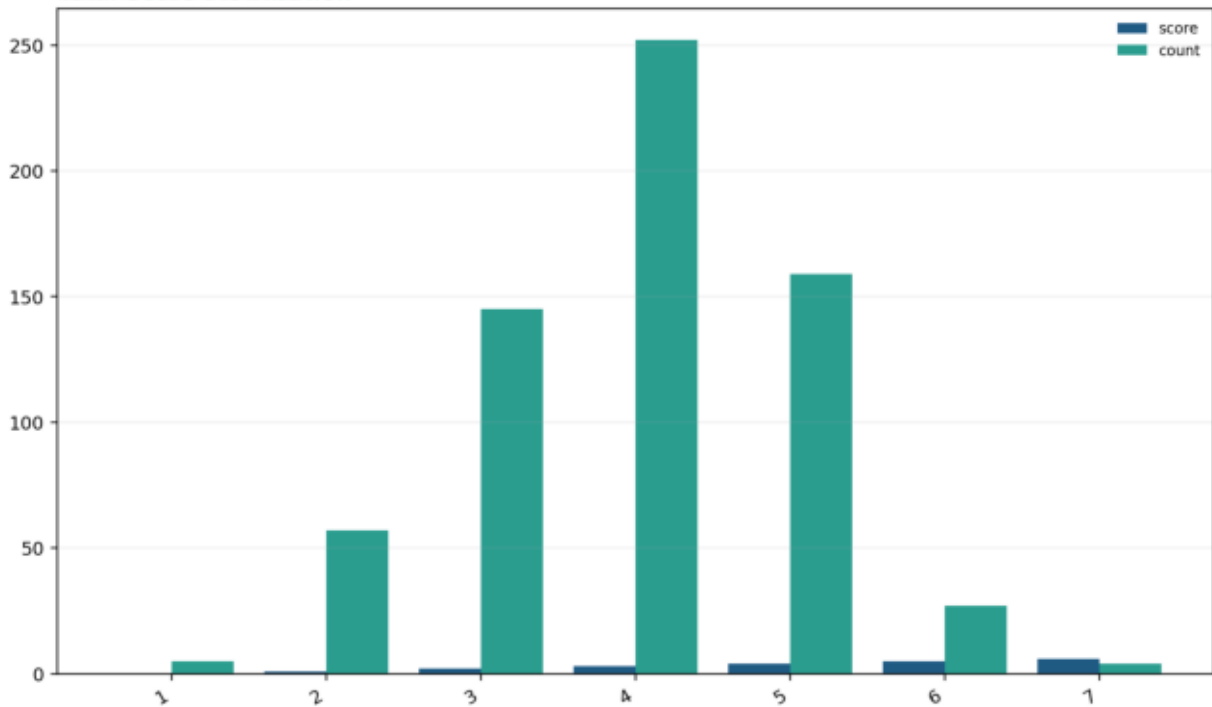
KR-21 uses the equal-difficulty approximation rather than item-specific p values.

KR-21=-0.425067.

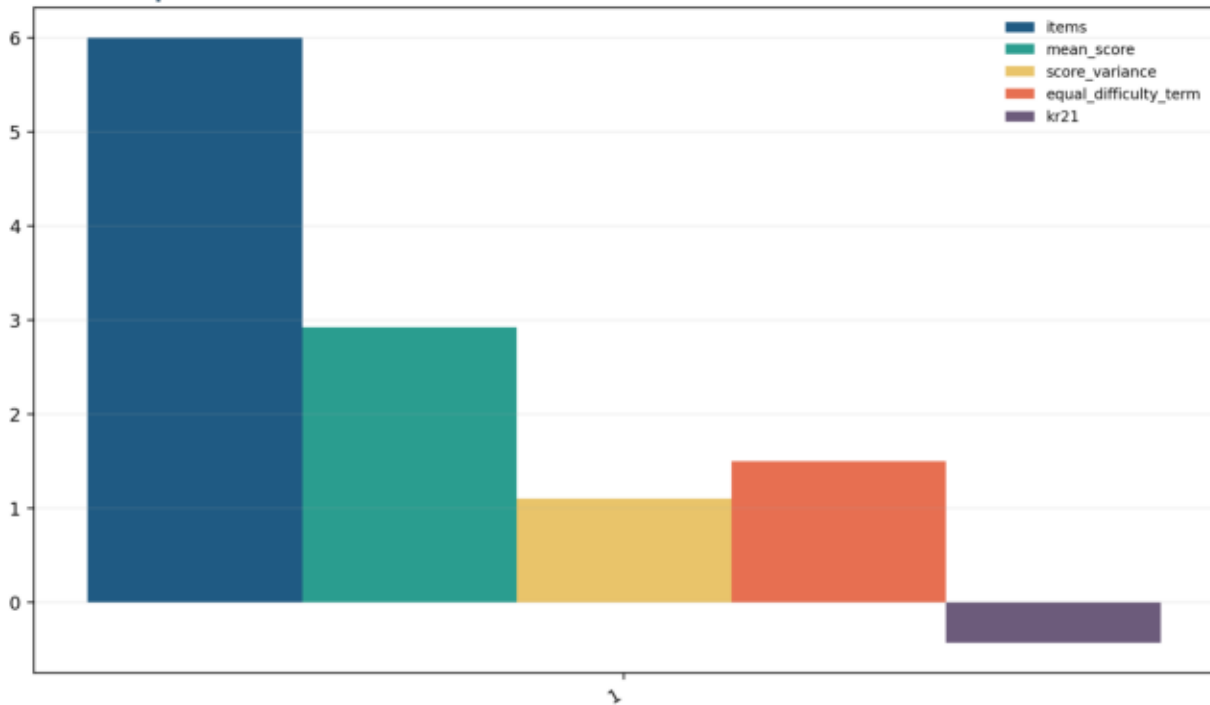
Primary Metrics



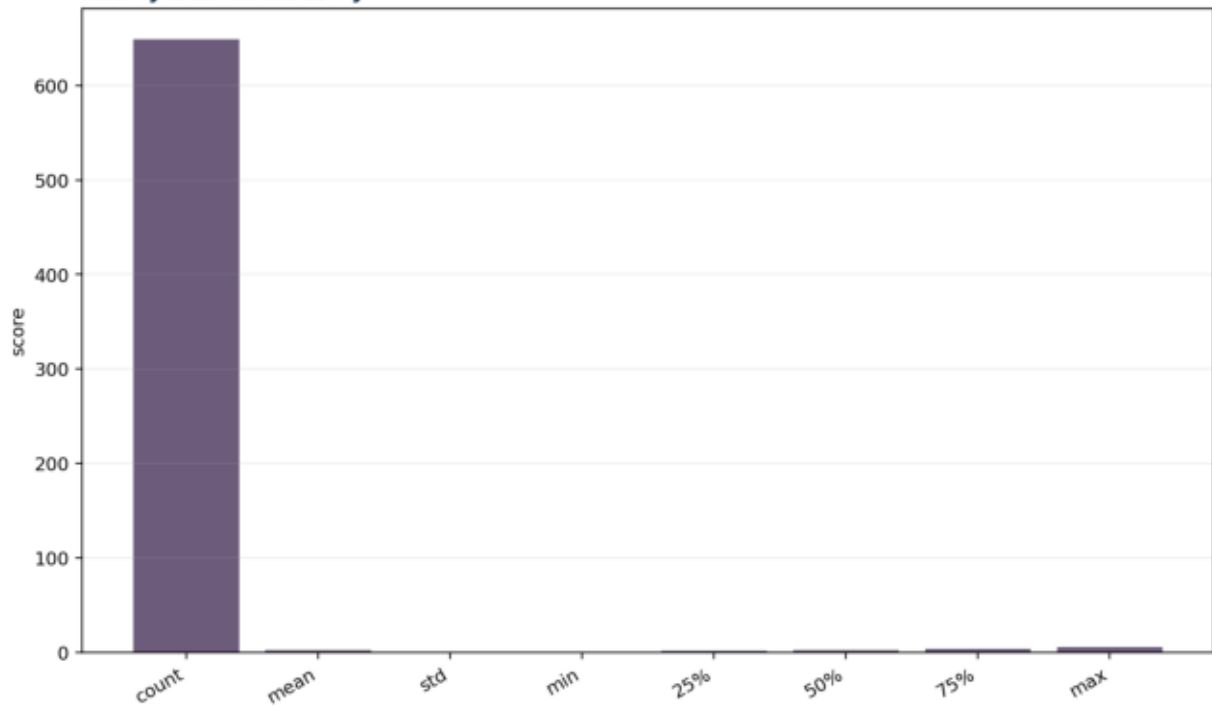
Total Score Distribution



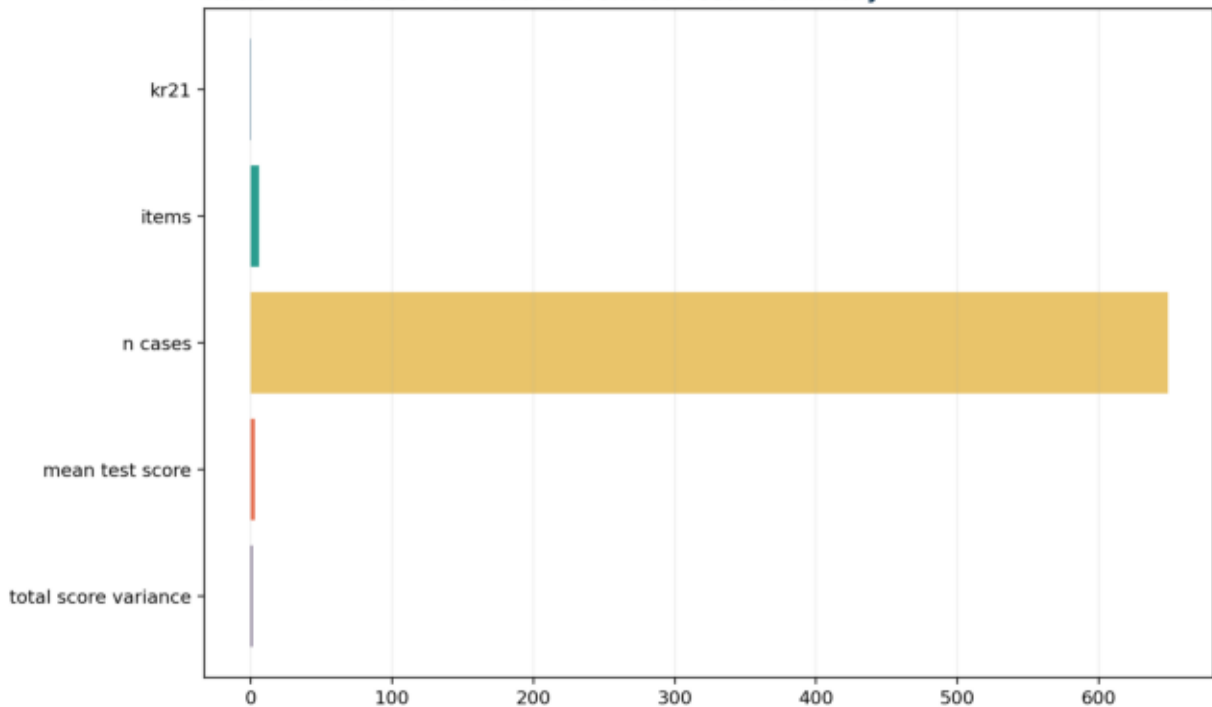
Kr21 Components 21



Binary Score Summary



Kuder-Richardson Formula 21 verified result summary



Primary Metrics

metric	value
kr21	-0.425067
items	6
n_cases	649
mean_test_score	2.9245
total_score_variance	1.10695

Total Score Distribution

score	count
0	5
1	57
2	145
3	252
4	159
5	27
6	4

Kr21 Components

items	mean_score	score_variance	equal_difficulty_term	kr21
6	2.9245	1.10695	1.49905	-0.425067

Binary Score Summary

index	score
count	649
mean	2.9245
std	1.05211
min	0
25%	2
50%	3
75%	4
max	6