

Guttman's Lambda-6

Standalone verified Python analysis

Test: Guttman's Lambda-6

Design: Regression-error lower-bound reliability for the six-item transformed scale.

Variables: famrel, freetime, goout, Dalc_R, Walc_R, health

Null hypothesis: The composite's reliable variance is no larger than the variance predicted among items.

Formula: $\lambda_6 = 1 - \frac{\sum s_i^2(1 - R_i^2)}{\sum s_i^2}$.

Source rows: 649

Calculated metrics:

lambda_6: 0.28877212602212743

items: 6

n_cases: 649

total_score_variance: 8.818552759230725

Independent reference values:

lambda_6: 0.28877212602212743

items: 6

n_cases: 649

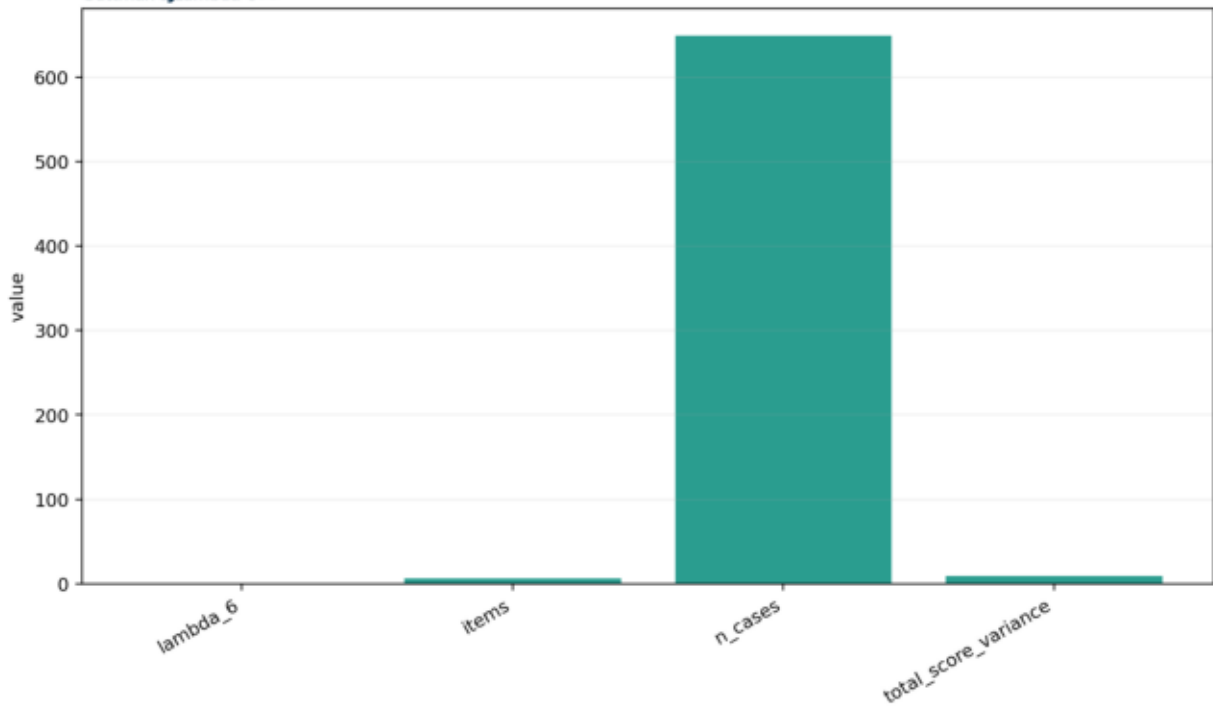
total_score_variance: 8.818552759230725

Interpretation:

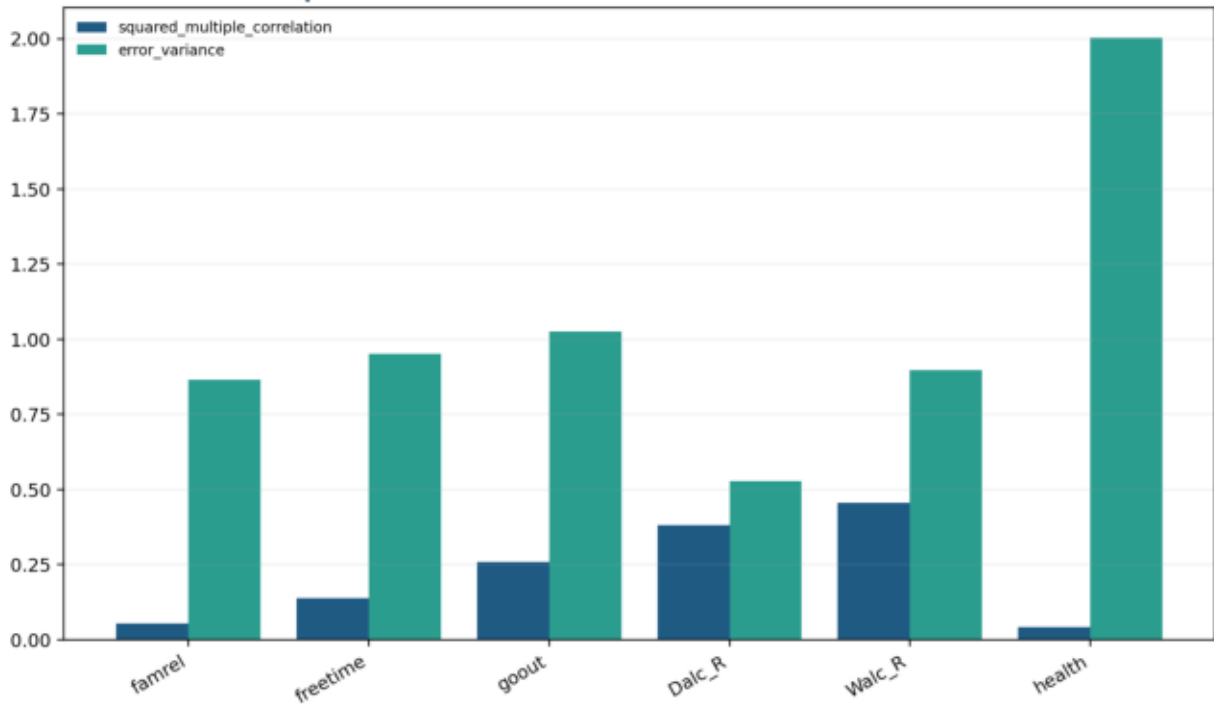
Each item is predicted from all other items before residual variance is summed.

Guttman lambda-6=0.288772.

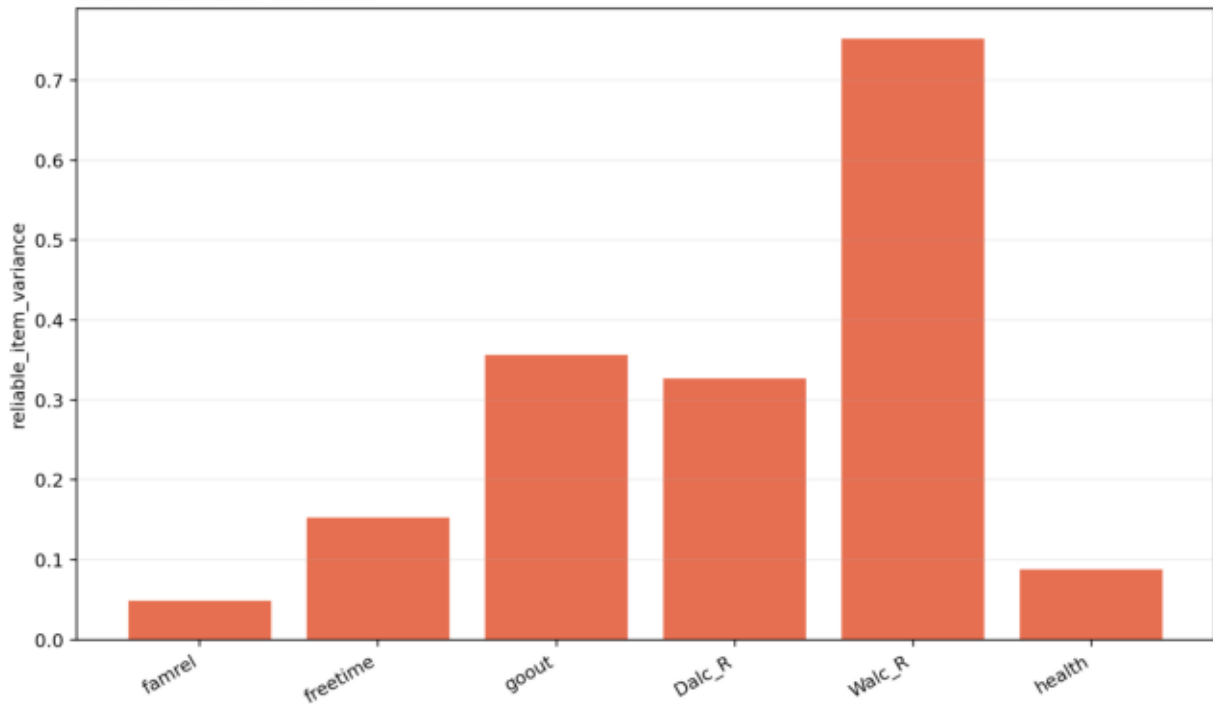
Primary Metrics



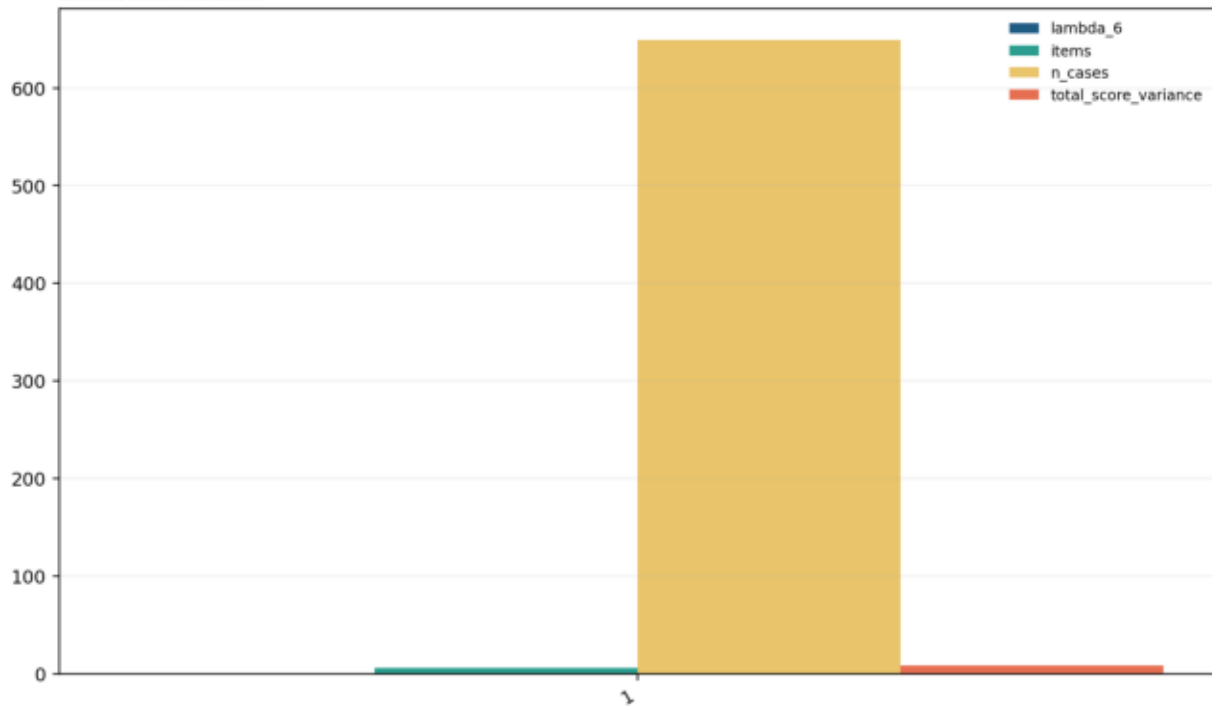
Lambda6 Item Components



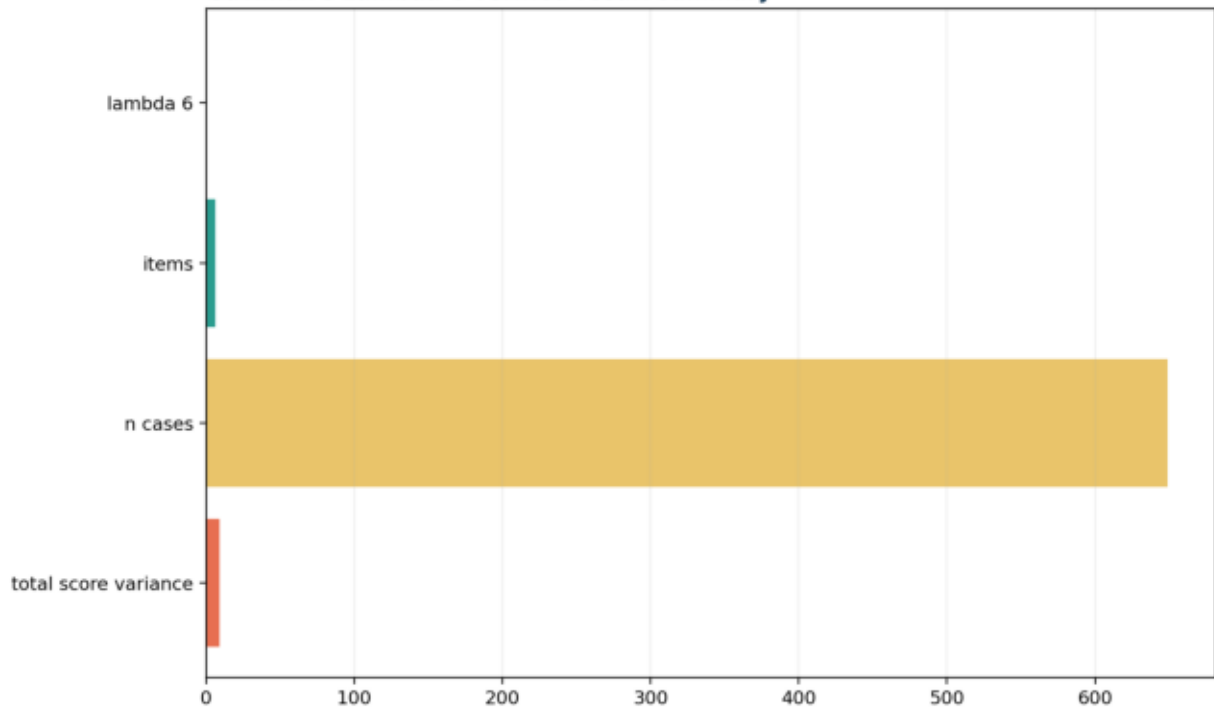
Predicted Item Variance



Lambda6-Result



Guttman's Lambda-6 verified result summary



Primary Metrics

metric	value
lambda_6	0.288772
items	6
n_cases	649
total_score_variance	8.81855

Lambda6 Item Components

item	squared_multiple_correlation	error_variance
famrel	0.053245	0.864761
freetime	0.138326	0.951973
goout	0.257962	1.02581
Dalc_R	0.382171	0.528441
Walc_R	0.455906	0.897555
health	0.0421713	2.00346

Predicted Item Variance

item	reliable_item_variance
famrel	0.0486337
freetime	0.152822
goout	0.356613
Dalc_R	0.326878
Walc_R	0.752077
health	0.0882082

Lambda6 Result

lambda_6	items	n_cases	total_score_variance
0.288772	6	649	8.81855