

Bartlett's Test of Sphericity

Standalone verified Python analysis

Test: Bartlett's Test of Sphericity

Design: Likelihood-ratio test that the six-variable population correlation matrix is identity.

Variables: G1, G2, G3, famrel, freetime, goout

Null hypothesis: The population correlation matrix is the identity matrix.

Formula: $\chi^2 = -[n-1-(2p+5)/6] \ln|R|$; $df = p(p-1)/2$.

Source rows: 649

Calculated metrics:

chi_square: 2220.6317415901754

df: 15

p_value: 0.0

determinant: 0.03200220358430366

n_cases: 649

Independent reference values:

chi_square: 2220.6317415901754

df: 15

p_value: 0.0

determinant: 0.03200220358430366

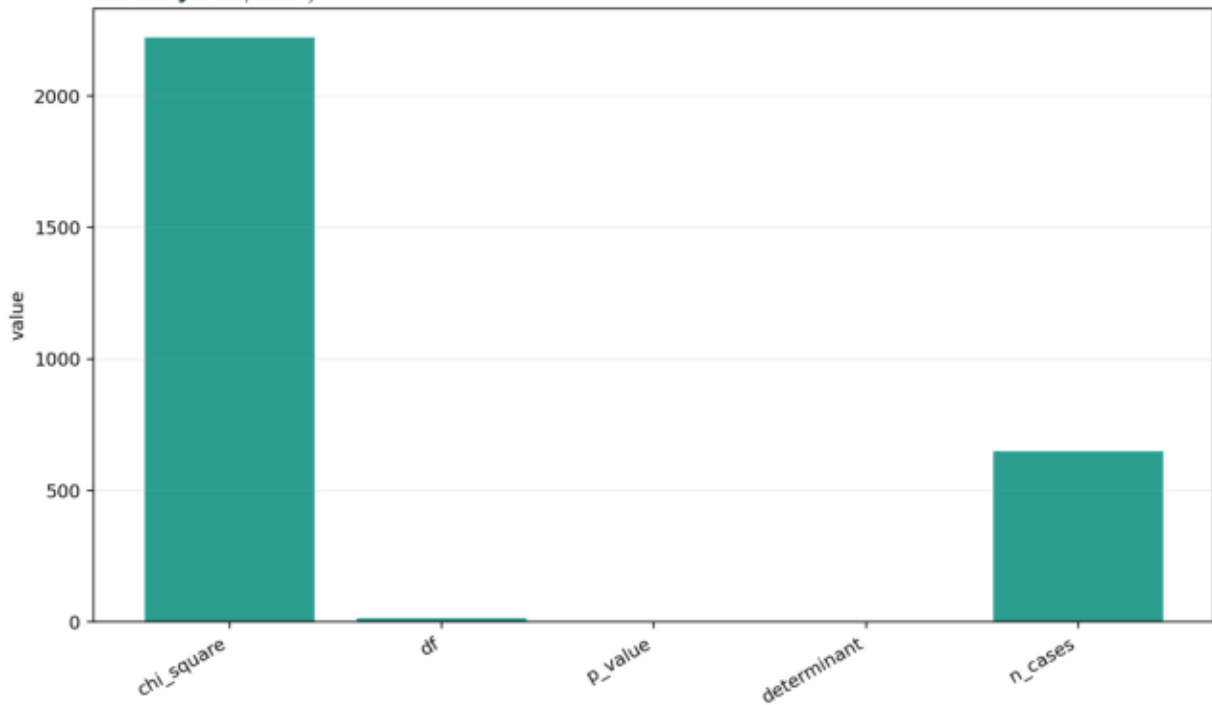
n_cases: 649

Interpretation:

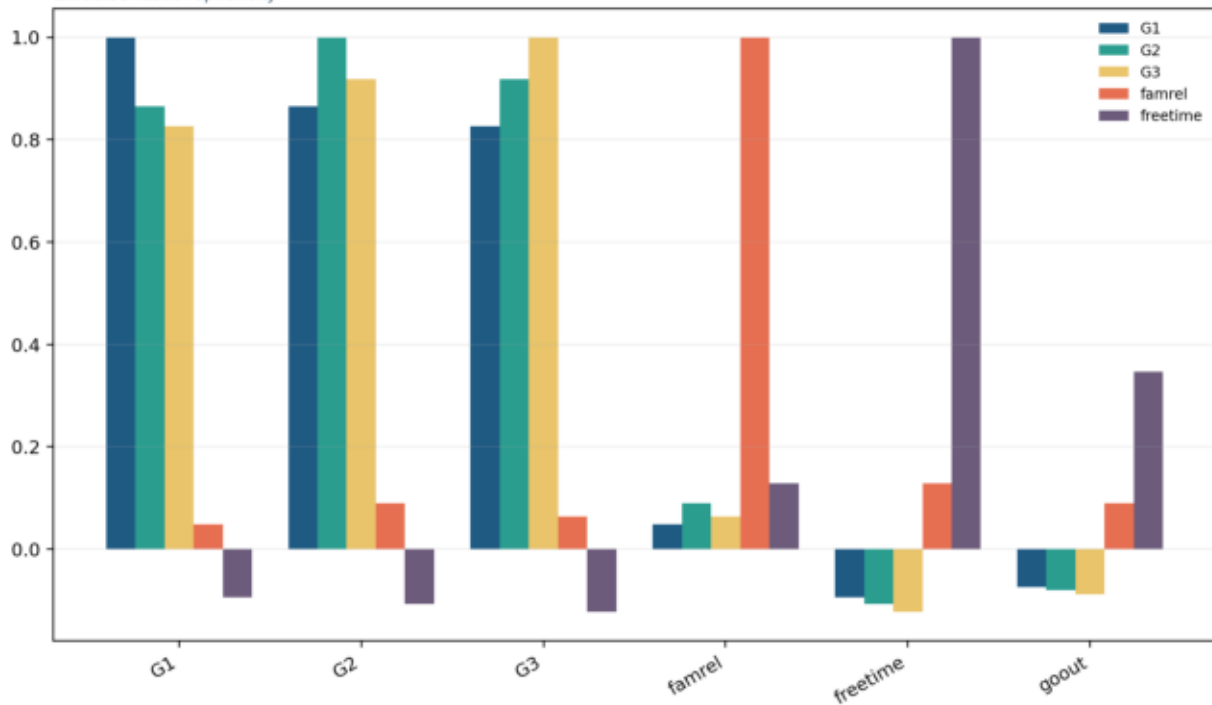
Bartlett's likelihood-ratio test evaluates identity of the full correlation matrix.

Chi-square(15)=2220.631742.

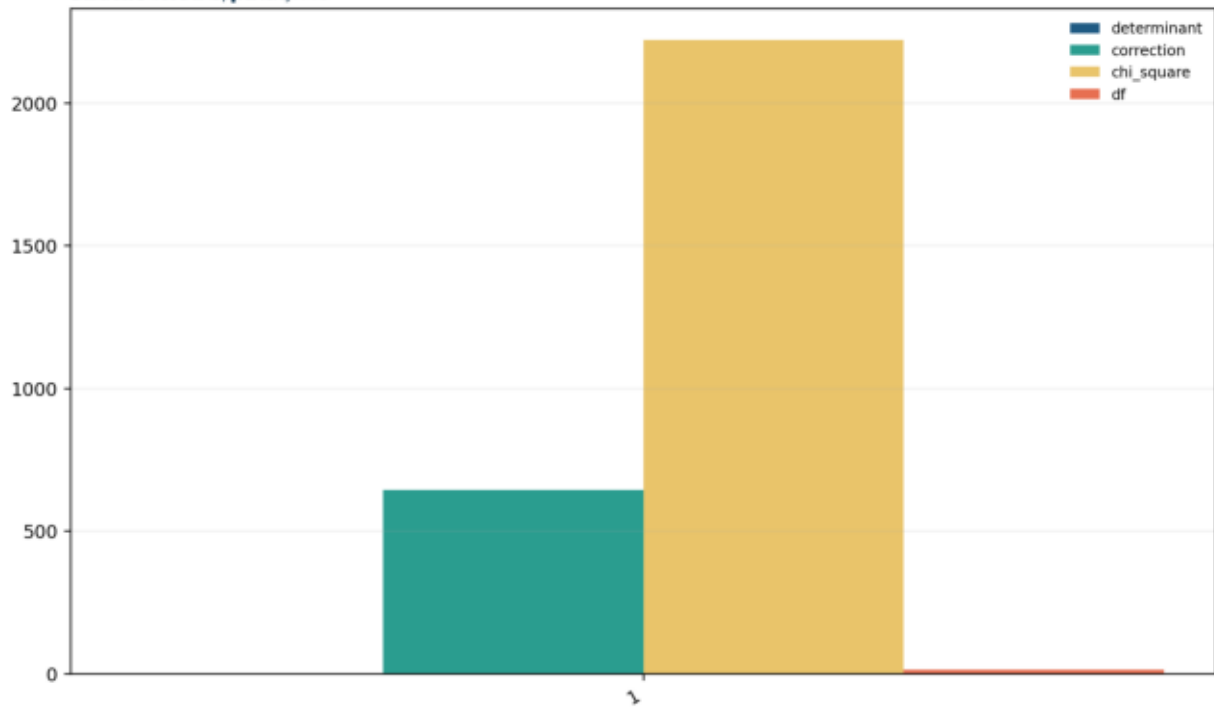
Primary Metrics



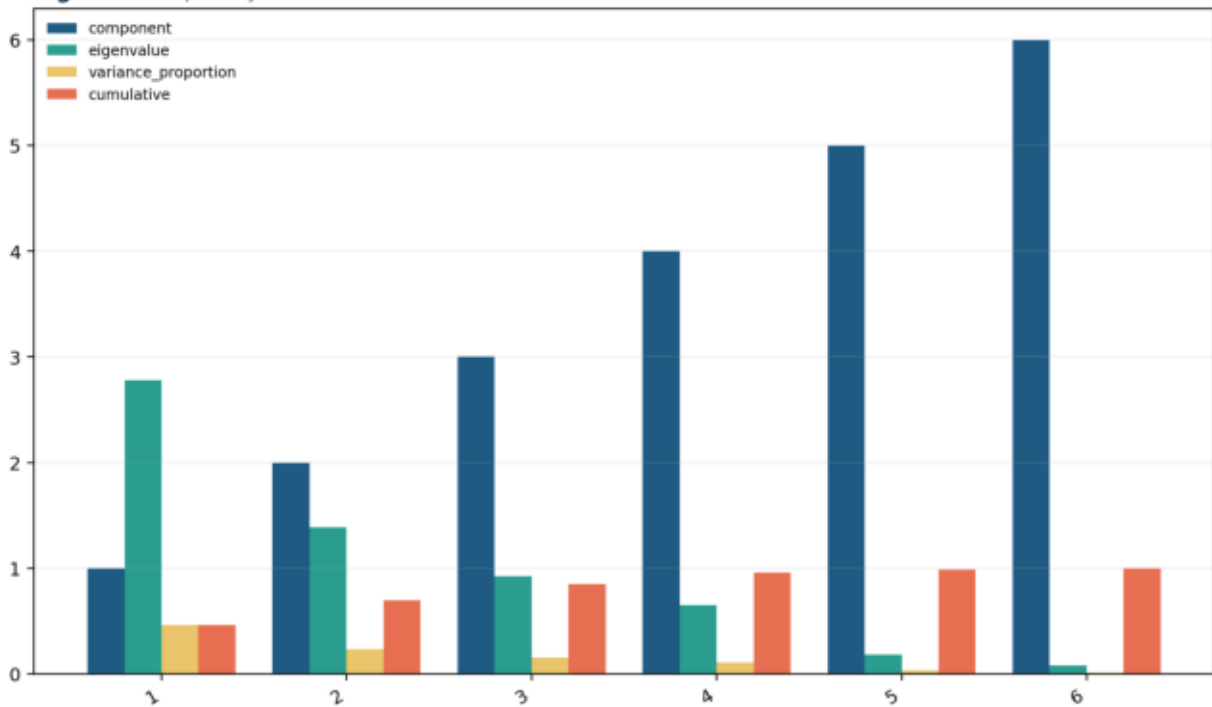
Correlation Matrix



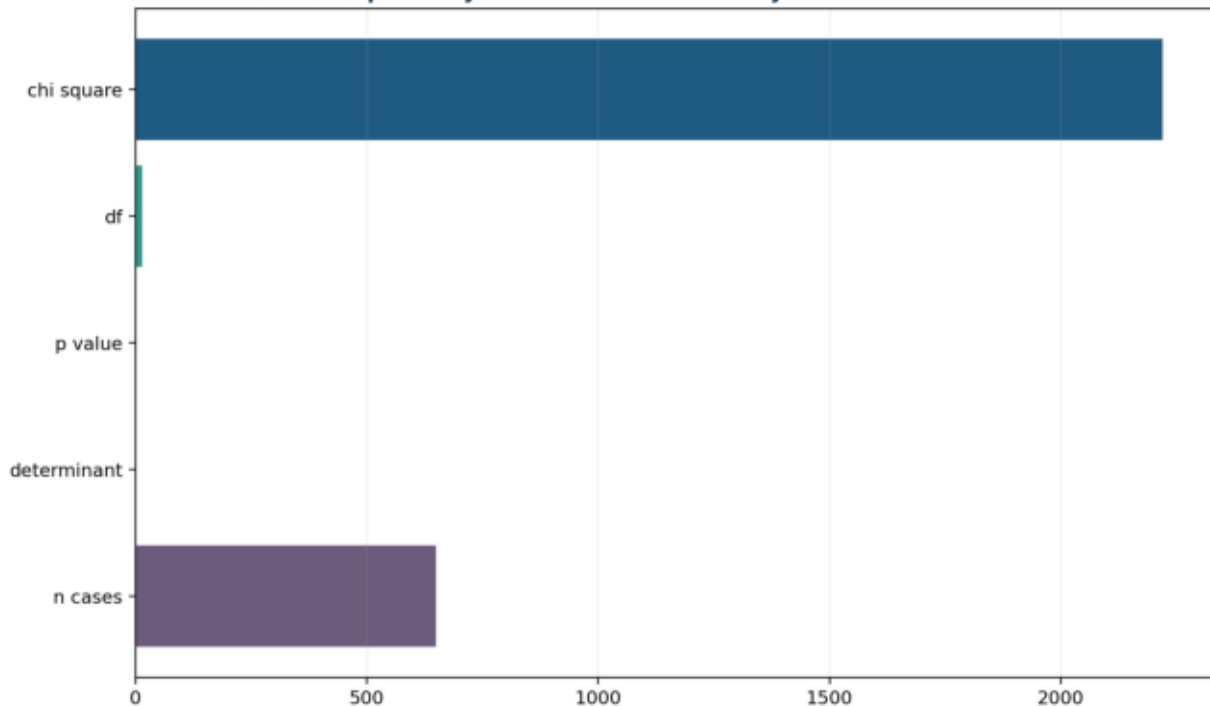
Bartlett Components



Eigenvaluesphericity



Bartlett's Test of Sphericity verified result summary



Primary Metrics

metric	value
chi_square	2220.63
df	15
p_value	0
determinant	0.0320022
n_cases	649

Correlation Matrix

item	G1	G2	G3	famrel	freetime	goout
G1	1	0.864982	0.826387	0.0487946	-0.0944966	-0.0740526
G2	0.864982	1	0.918548	0.0895878	-0.106678	-0.0794692
G3	0.826387	0.918548	1	0.0633611	-0.122705	-0.0876407
famrel	0.0487946	0.0895878	0.0633611	1	0.129216	0.0897066
freetime	-0.0944966	-0.106678	-0.122705	0.129216	1	0.346352
goout	-0.0740526	-0.0794692	-0.0876407	0.0897066	0.346352	1

Bartlett Components

determinant	correction	chi_square	df
0.0320022	645.167	2220.63	15

Eigenvalues

component	eigenvalue	variance_proportion	cumulative
1	2.78287	0.463812	0.463812
2	1.3848	0.230801	0.694612
3	0.924099	0.154016	0.848629
4	0.650103	0.108351	0.956979
5	0.182299	0.0303832	0.987362
6	0.0758252	0.0126375	1