

Principal Component Analysis

Test: Principal Component Analysis

Design: Orthogonal variance-maximizing decomposition of the six standardized variables.

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

Null hypothesis: The retained components explain no more variance than individual standardized variables.

Formula: $PC_j = X v_j$ with $R v_j = \lambda_j v_j$; explained proportion = λ_j / p .

Source rows: 649

Calculated metrics:

first_eigenvalue: 2.782869896154

second_eigenvalue: 1.38480367966778

first_component_variance: 0.463811649359

first_two_cumulative_variance: 0.694612262636963

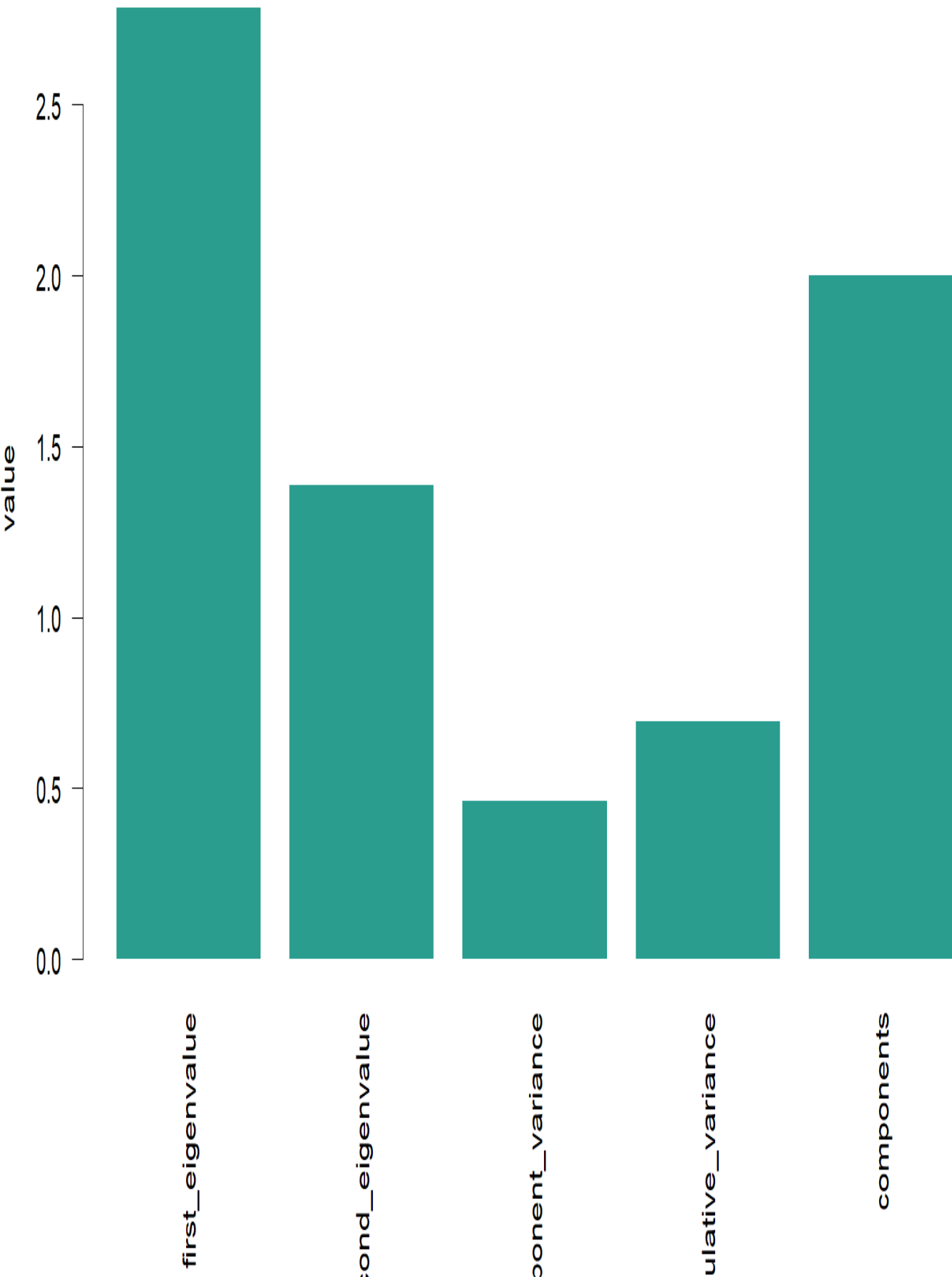
components: 2

Interpretation:

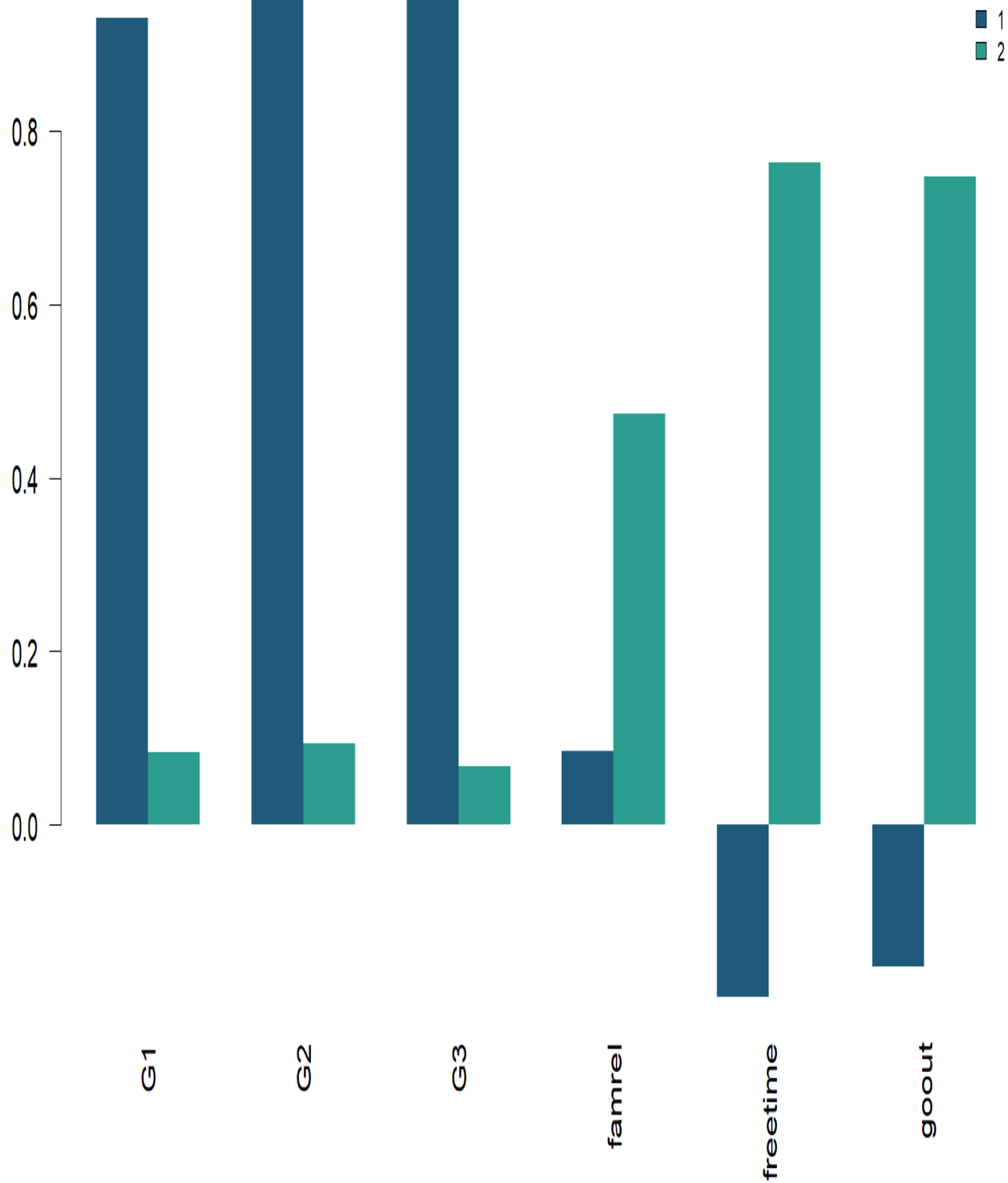
PCA explains total standardized variance.

First two variance 0.694612262636963

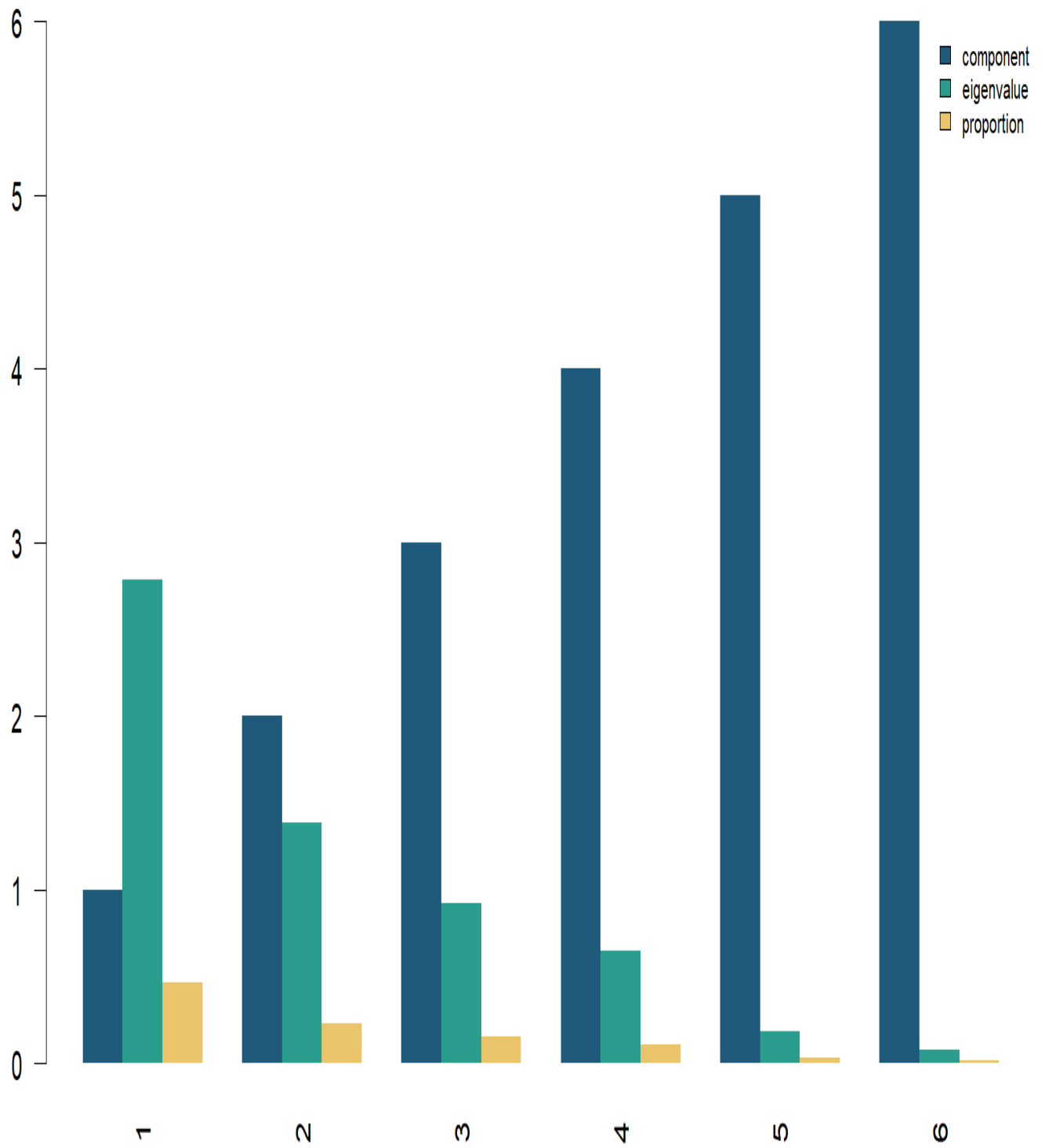
Principal Component Analysis - primary metrics



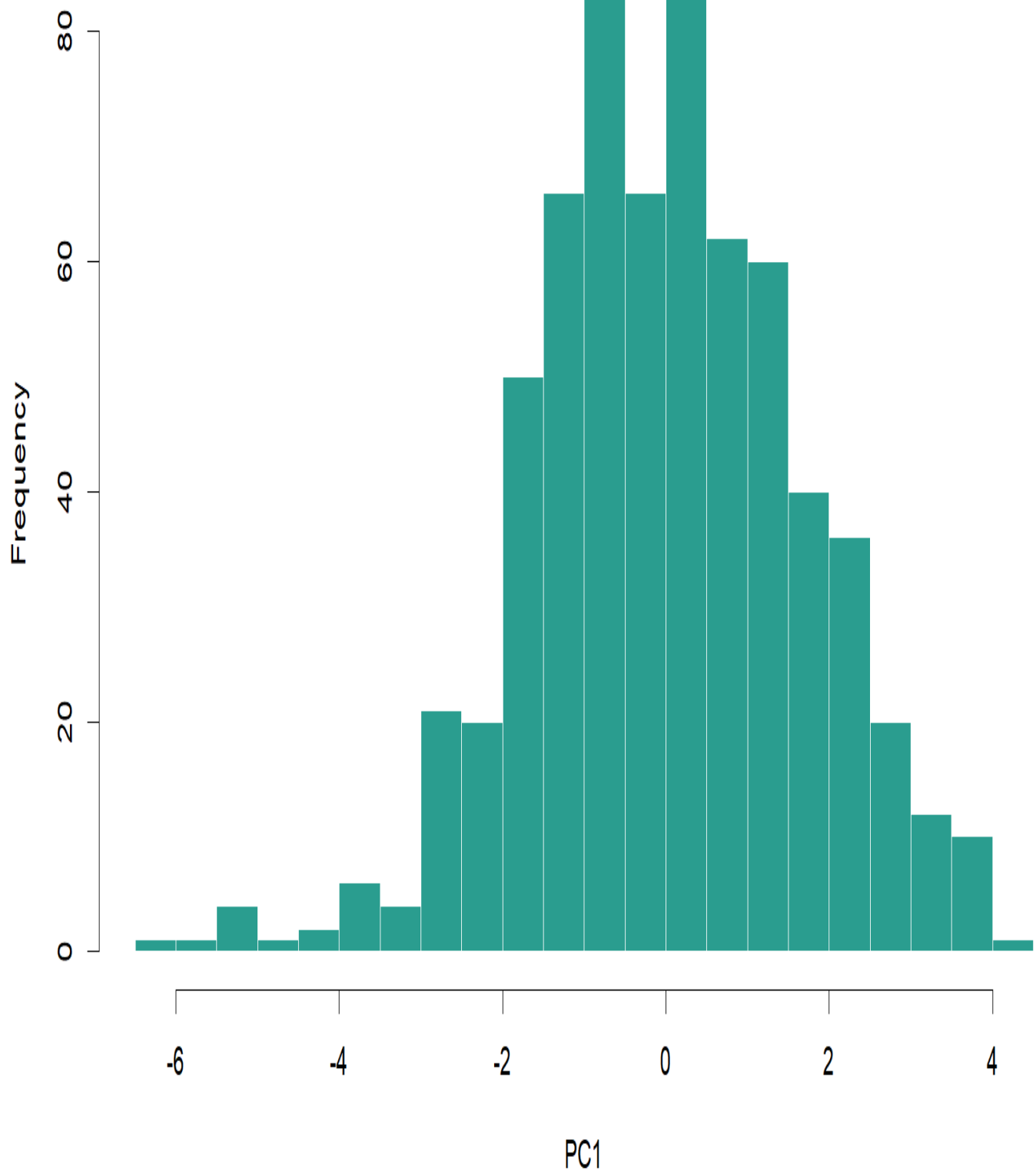
Principal Component Analysis - pca component loadings



Principal Component Analysis - pca explained variance



Principal Component Analysis - pca component scores



Principal Component Analysis verified results

