Friedman Test for Likert Data

Standalone verified Python analysis

Method: Friedman Test for Likert Data

Method type: hypothesis_test

Design: Within-respondent comparison of three related ordered social-response items.

Variables: famrel, freetime, goout

Inference scope: H0: the three related item distributions have equal location/rank profiles.

Formula: Q=[12/(n*k*(k+1))]*sum(R_j^2)-3*n*(k+1); W=Q/[n*(k-1)].

Source rows: 649

Calculated metrics:

friedman_chi_square: 224.05244578920835

df: 2

p_value: 2.226535215324847e-49

kendalls_w: 0.17261359459877376

n_complete: 649

items: 3

Independent reference values:

friedman_chi_square: 224.05244578920835

df: 2

p_value: 2.226535215324847e-49

kendalls_w: 0.17261359459877376

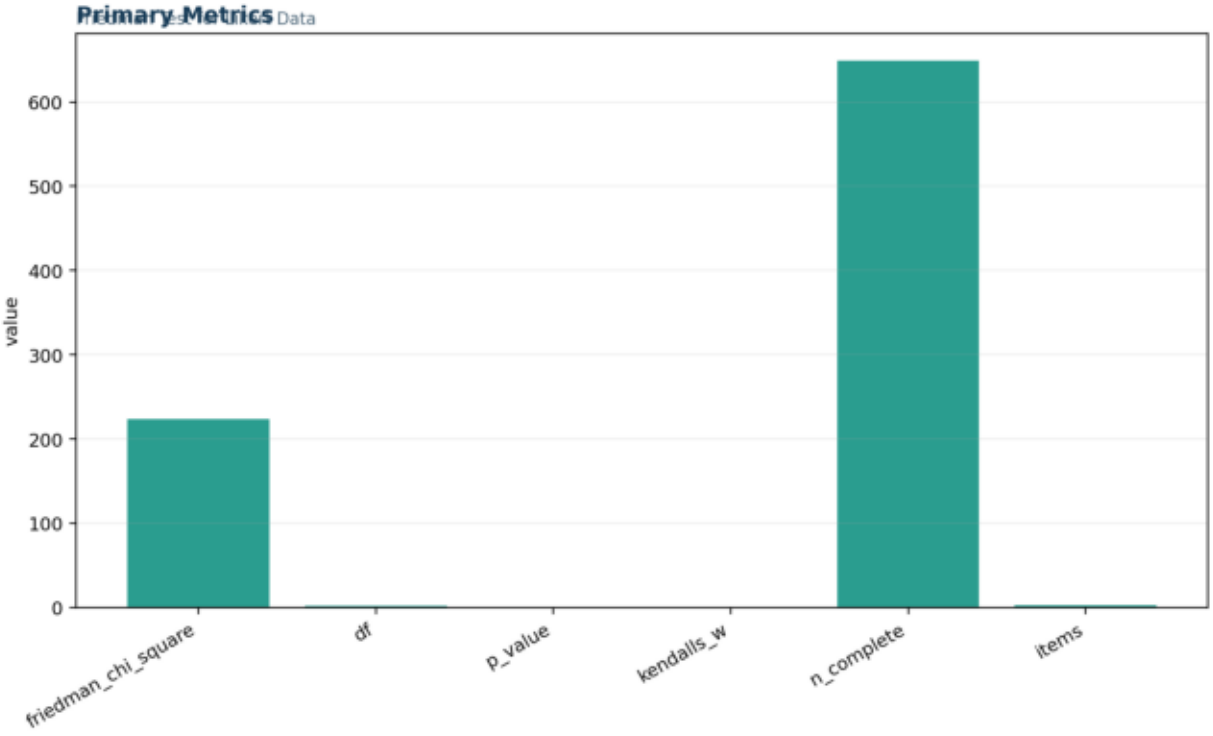
n_complete: 649

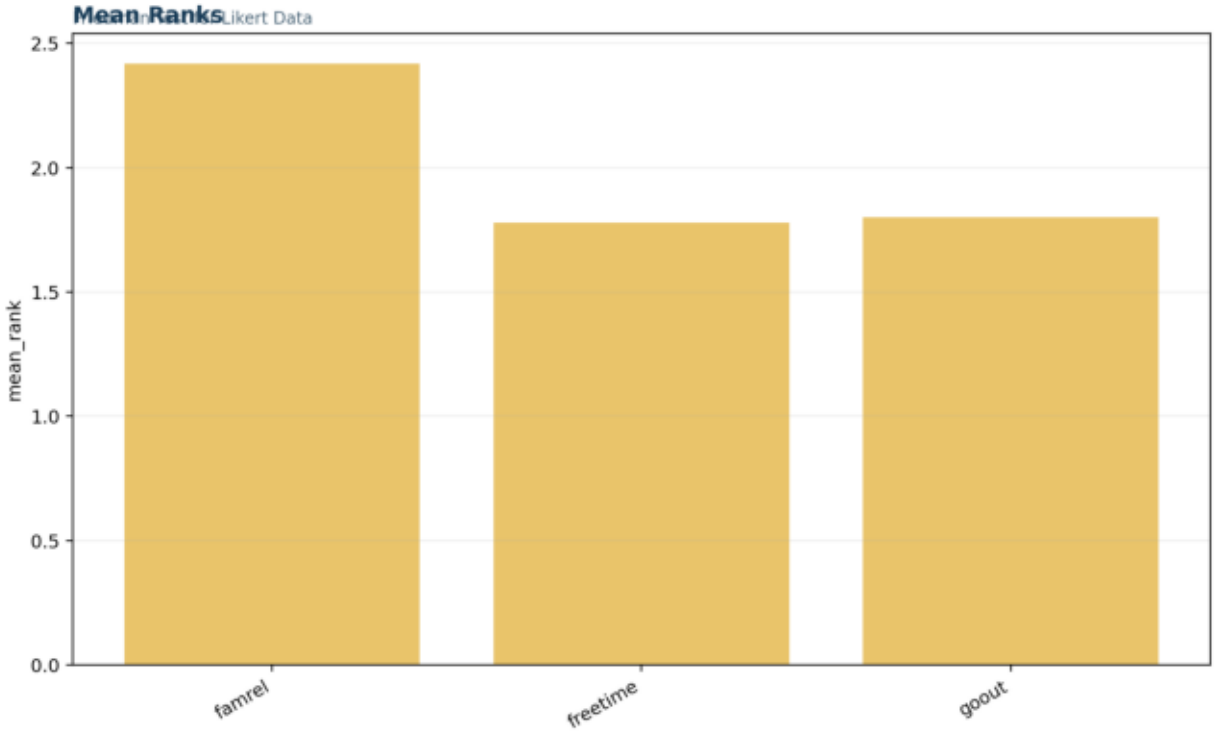
items: 3

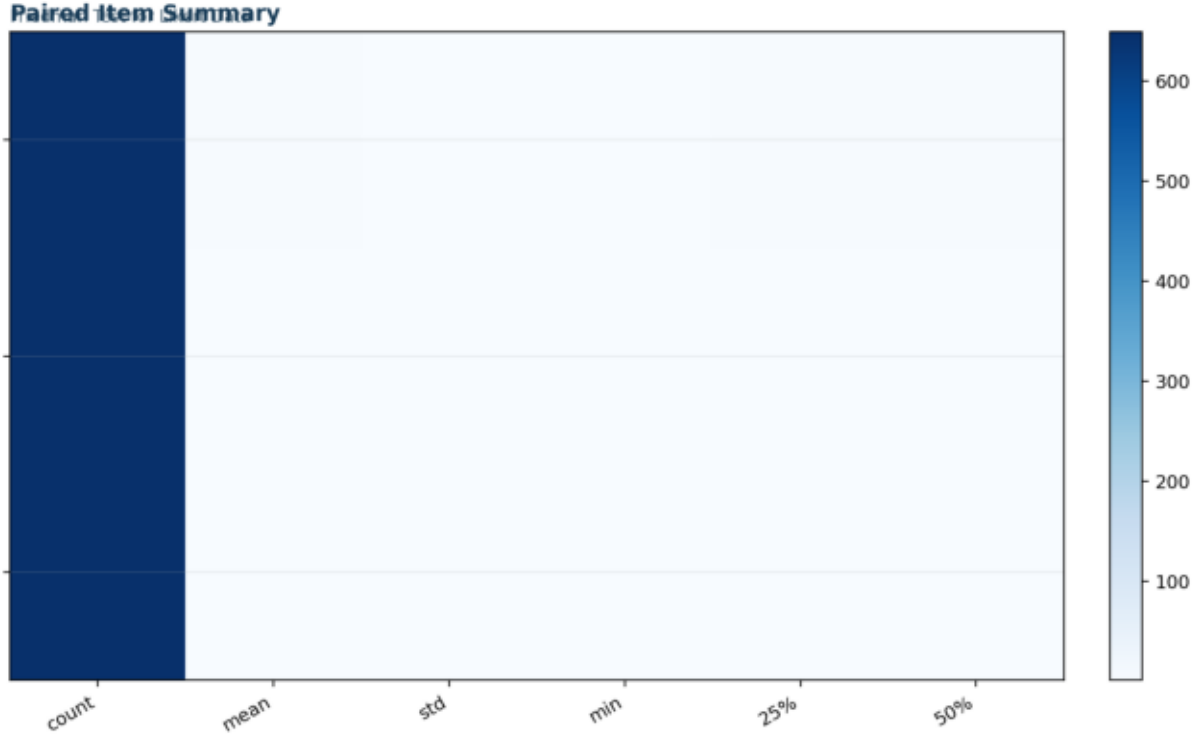
Interpretation:

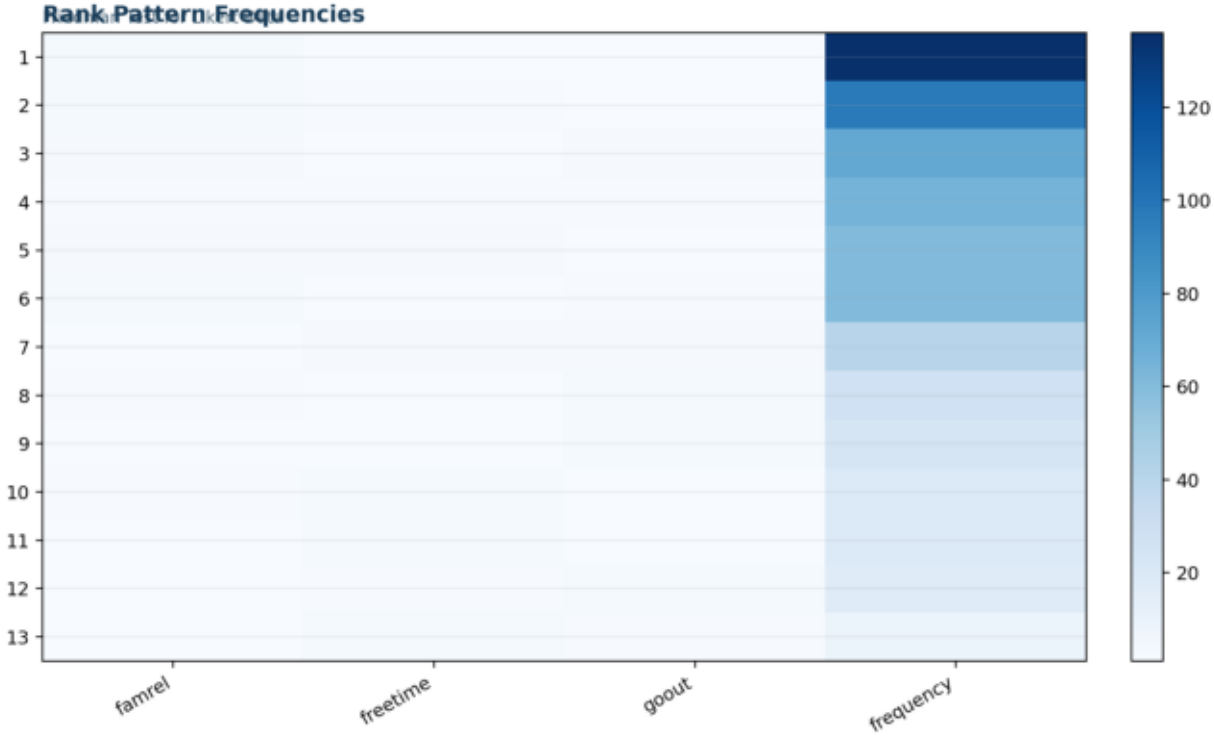
All three responses are ranked within respondent before summing ranks by item.

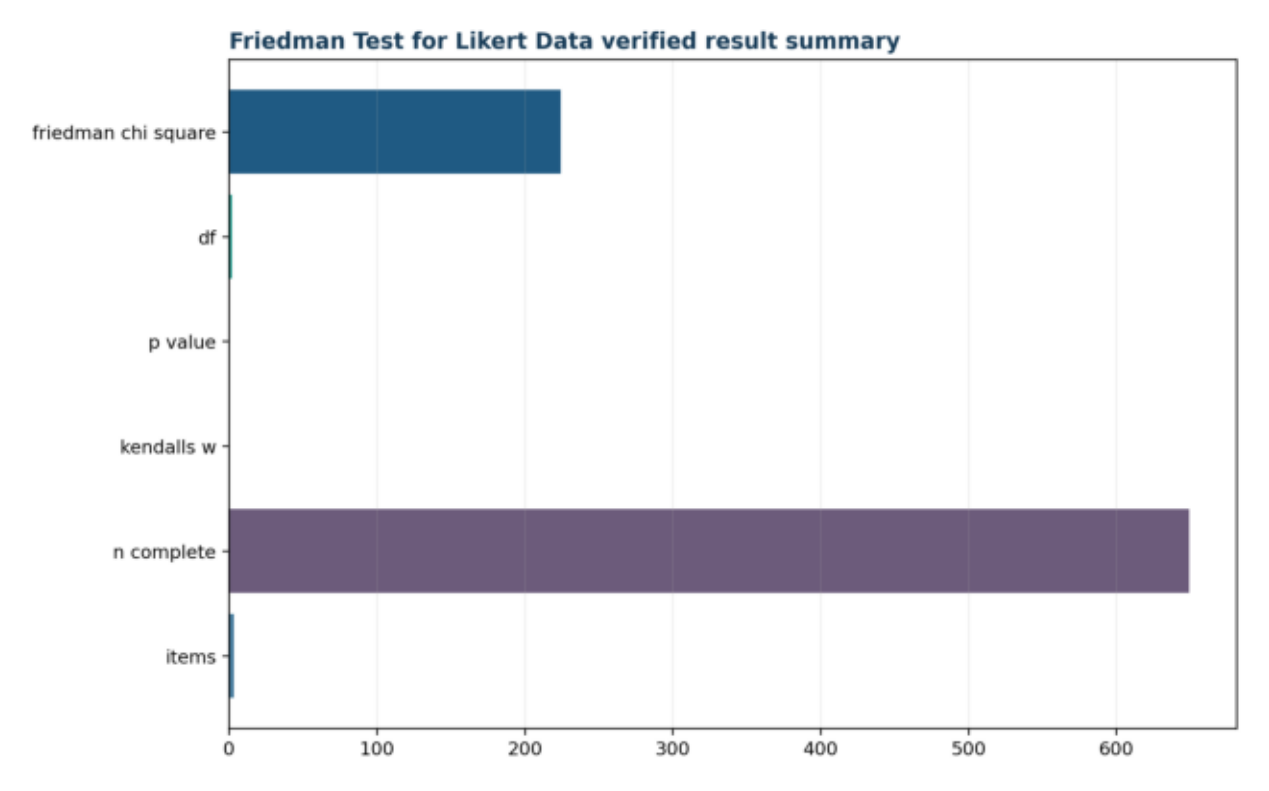
Friedman chi-square=224.052446; Kendall's W=0.172614.


Primary Metrics
Data
value
600
500
400
300
200
100
0
friedman_chi_square
df
p_value
kendalls_w
n_complete
items


Mean Ranks
Likert Data
mean_rank
2.5
2.0
1.5
1.0
0.5
0.0
famrel
freetime
goout


Paired Item Summary
1
2
3
600
500
400
300
200
100
count
mean
std
min
25%
50%


Rank Pattern Frequencies
1
2
3
4
5
6
7
8
9
10
11
12
13
famrel
freetime
goout
frequency
120
100
80
60
40
20


Friedman Test for Likert Data verified result summary
friedman chi square
df
p value
kendalls w
n complete
items
0
100
200
300
400
500
600

Primary Metrics

metric	value
friedman_chi_square	224.052
df	2
p_value	2.22654e-49
kendalls_w	0.172614
n_complete	649
items	3

Mean Ranks

item	mean_rank
famrel	2.41911
freetime	1.77966
goout	1.80123

Paired Item Summary

item	count	mean	std	min	25%	50%	75%	max
famrel	649	3.93066	0.955717	1	4	4	5	5
freetime	649	3.18028	1.05109	1	3	3	4	5
goout	649	3.1849	1.17577	1	2	3	4	5

Rank Pattern Frequencies

famrel	freetime	goout	frequency
3	1.5	1.5	136
3	2	1	97
2.5	1	2.5	72
2	2	2	65
2.5	2.5	1	61
3	1	2	61
1	2.5	2.5	41
2	1	3	28
1.5	1.5	3	24
2	3	1	19
1.5	3	1.5	19
1	2	3	17
1	3	2	9