

Mann Whitney U Test for Likert Data

Standalone verified Python analysis

Method: Mann Whitney U Test for Likert Data

Method type: hypothesis_test

Design: Two-sided rank comparison of family-relationship responses between female and male respondents.

Variables: sex, famrel

Inference scope: H0: the two independent response distributions are equal; $P(F \text{ response} > M \text{ response}) + 0.5P(\text{tie}) = 0.5$.

Formula: $U_F = R_F - n_F(n_F + 1)/2$; $\text{rank-biserial} = 2U_F / (n_F * n_M) - 1$.

Source rows: 649

Calculated metrics:

u_statistic_female: 46516.5

p_value: 0.04216088926762922

rank_biserial: -0.08681952924085667

n_female: 383

n_male: 266

female_median: 4.0

male_median: 4.0

Independent reference values:

u_statistic_female: 46516.5

p_value: 0.04216088926762922

rank_biserial: -0.08681952924085667

n_female: 383

n_male: 266

female_median: 4.0

male_median: 4.0

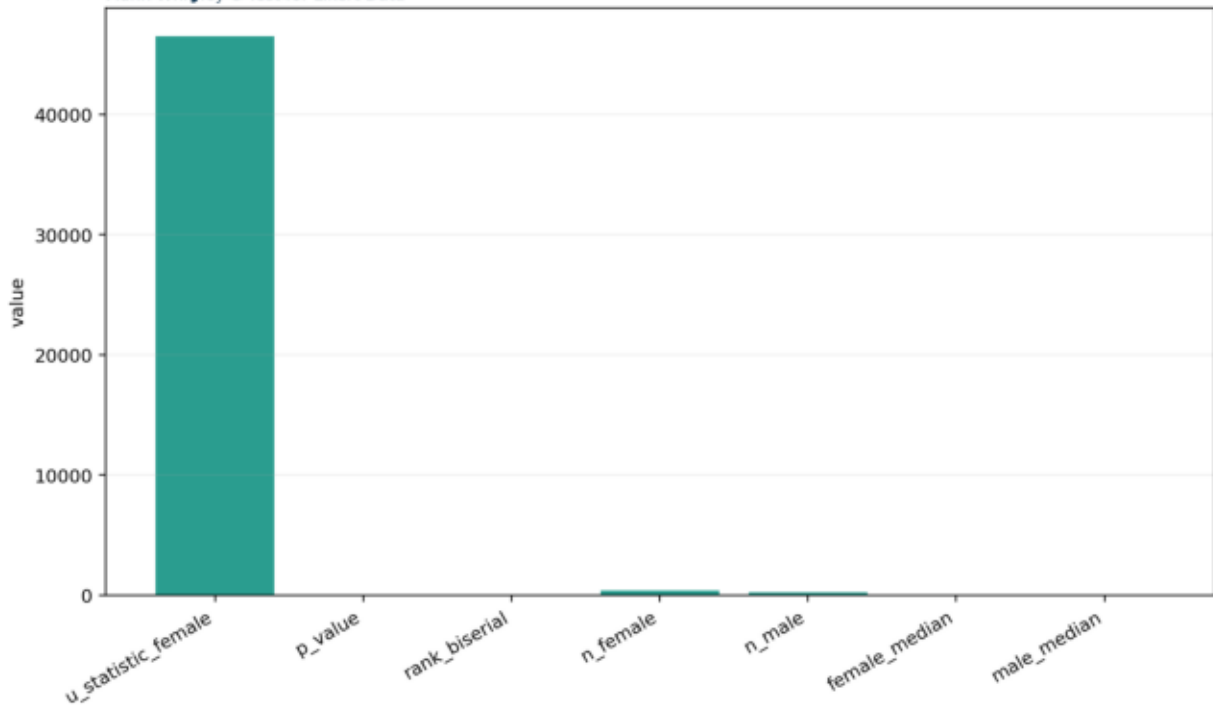
Interpretation:

U is oriented to the female group and uses an asymptotic tie correction.

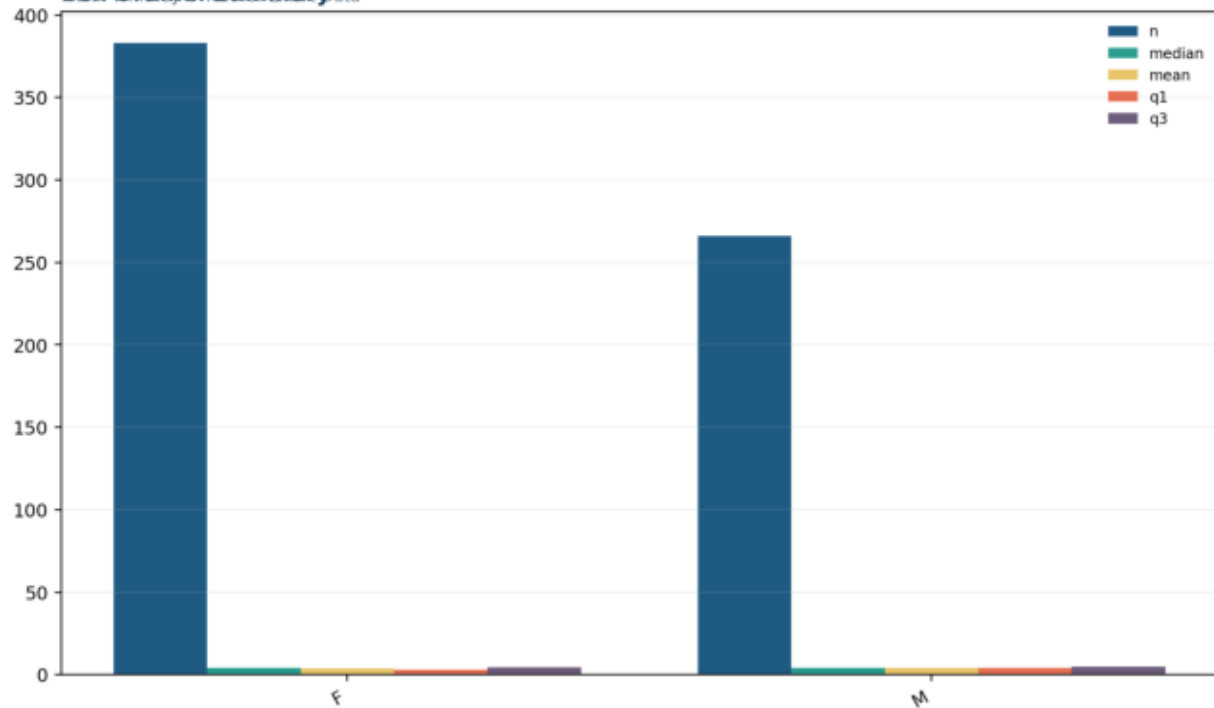
U=46516.500000, p=0.0421609, rank-biserial=-0.086820.

Primary Metrics

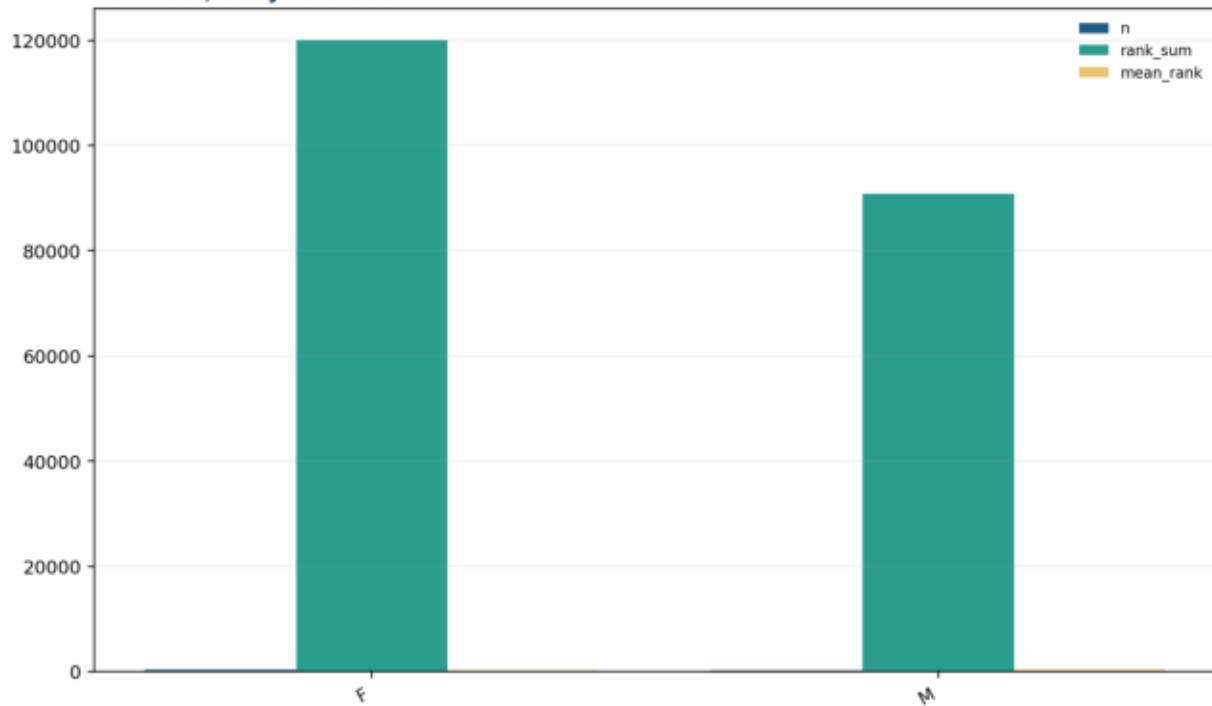
Ranking Metric for Likert Data



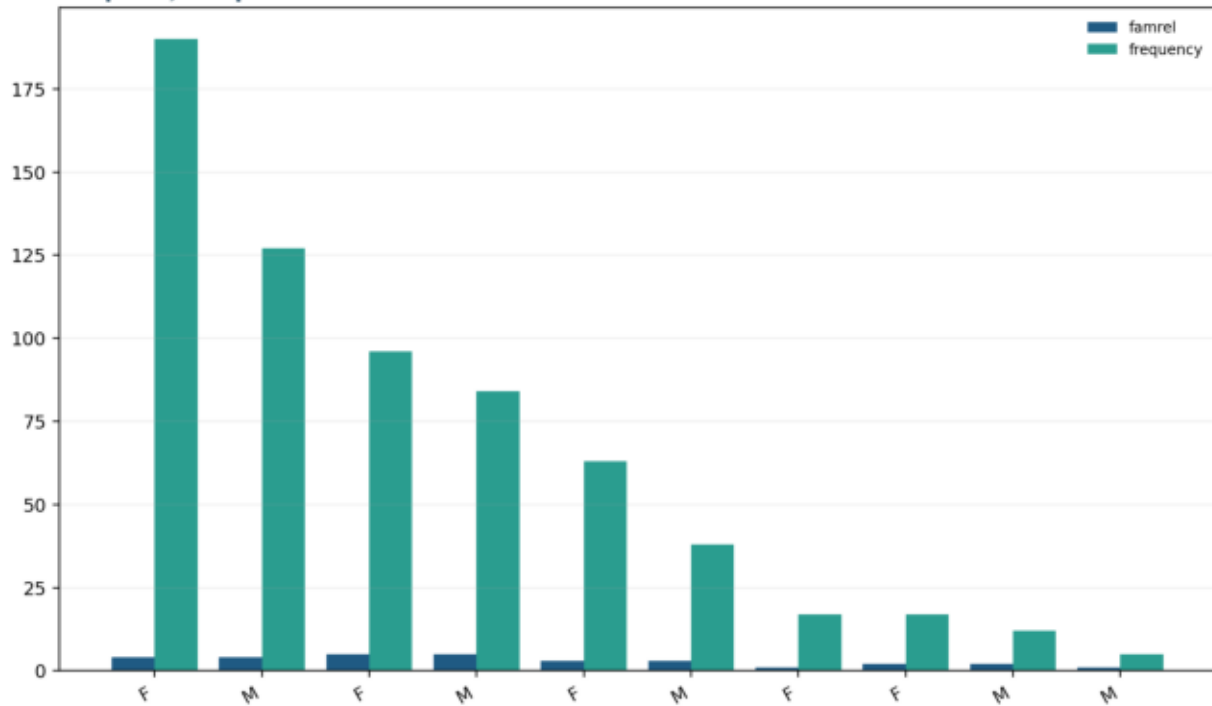
Sex Ordinal Summary



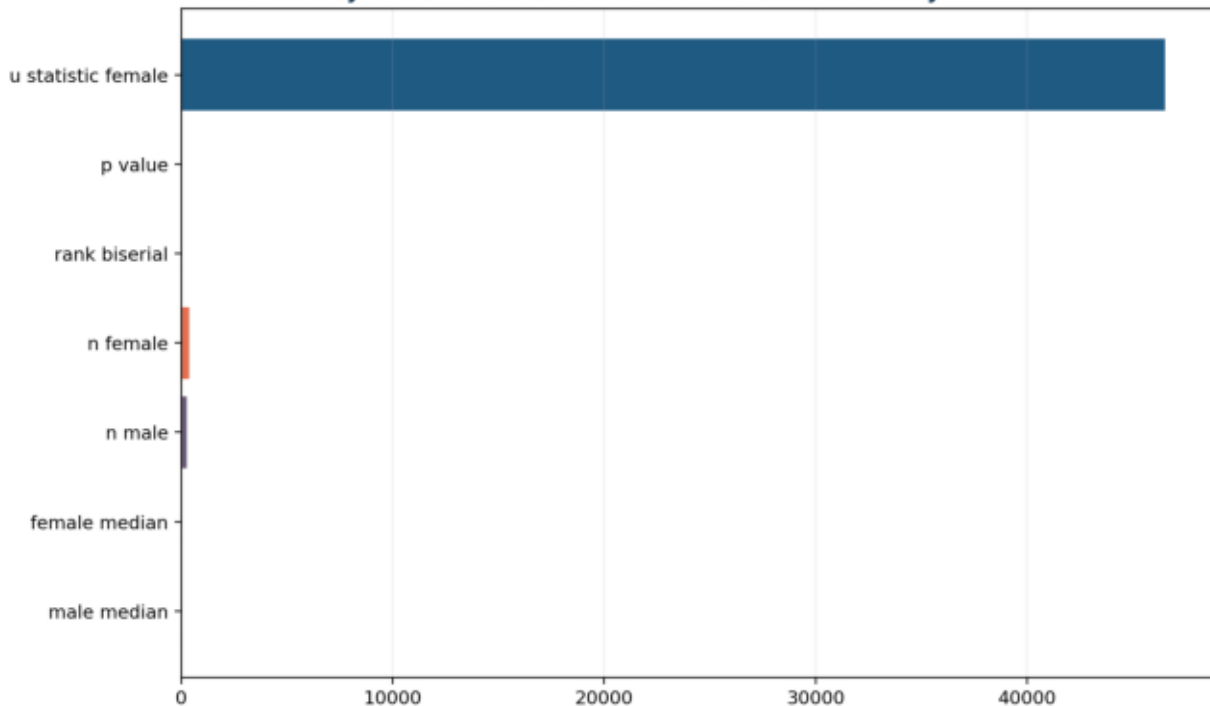
Rank Summary
Visual Summary for Likert Data



Response Frequencies



Mann Whitney U Test for Likert Data verified result summary



Primary Metrics

metric	value
u_statistic_female	46516.5
p_value	0.0421609
rank_biserial	-0.0868195
n_female	383
n_male	266
female_median	4
male_median	4

Sex Ordinal Summary

sex	n	median	mean	q1	q3
F	383	4	3.86423	3	4.5
M	266	4	4.02632	4	5

Rank Summary

sex	n	rank_sum	mean_rank
F	383	120052	313.453
M	266	90872.5	341.626

Response Frequencies

sex	famrel	frequency
F	4	190
M	4	127
F	5	96
M	5	84
F	3	63
M	3	38
F	1	17
F	2	17
M	2	12
M	1	5