Predicting Life Quality

Analysis I: Ordinal Regression

- Input Variables: # of Close Friends (cat), Goes to Church (cat)
- Output Variables: Life Satisfaction (ordinal)
- Summary:

Note Low P-values

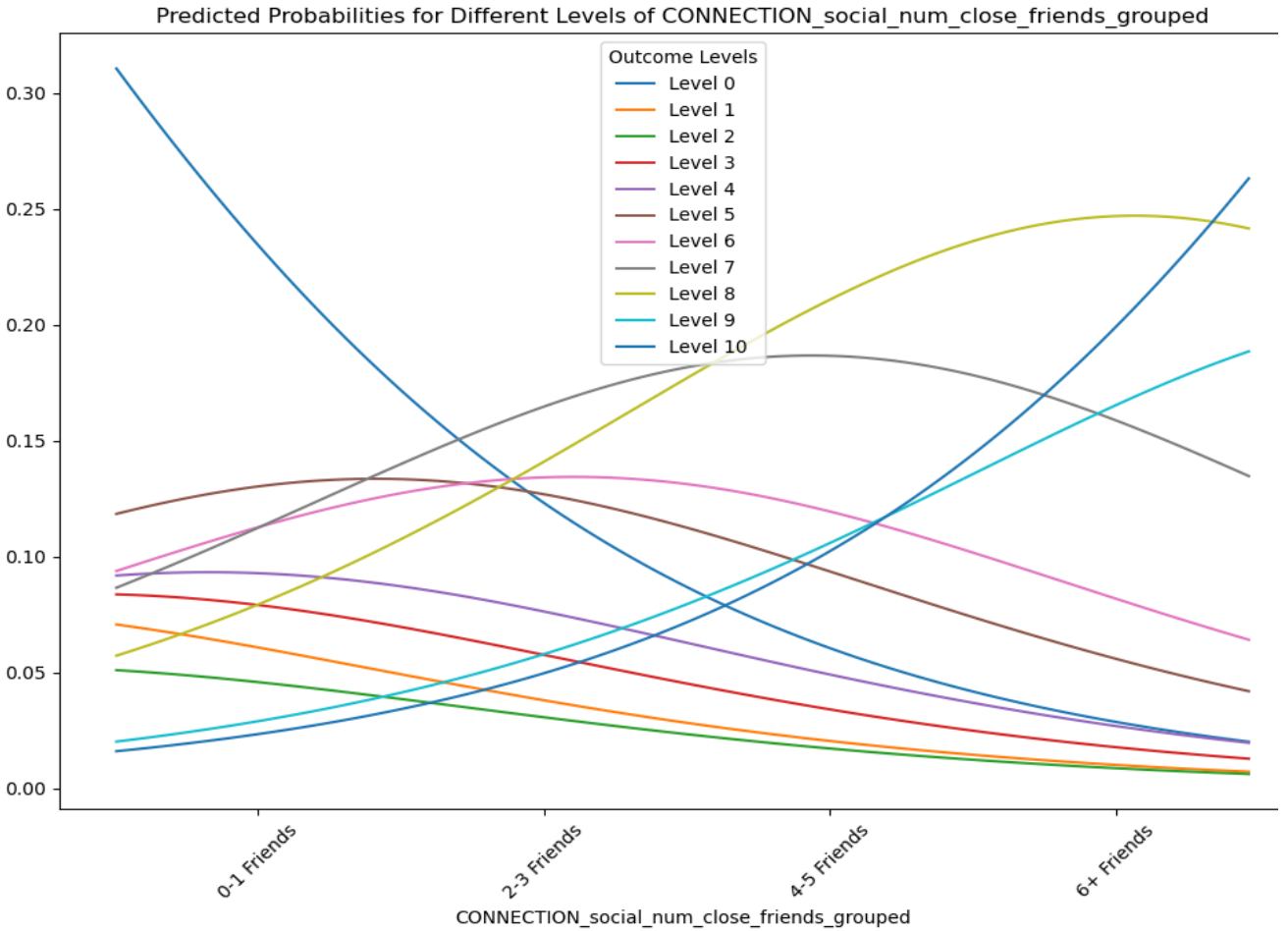
	coef	std err	z	P>|z|	[0.025	0.975]
CONNECTION_social_num_close_friends_grouped	0.7716	0.016	47.460	0.000	0.740	0.803
CONNECTION_activities_church_p3m	0.0270	0.006	4.821	0.000	0.016	0.038
-1/0	-1.4885	0.029	-51.711	0.000	-1.545	-1.432
0/1	-1.1605	0.047	-24.863	0.000	-1.252	-1.069
1/2	-1.5529	0.053	-29.229	0.000	-1.657	-1.449
2/3	-1.0892	0.039	-27.969	0.000	-1.165	-1.013
3/4	-0.9832	0.034	-28.734	0.000	-1.050	-0.916
4/5	-0.6210	0.027	-23.287	0.000	-0.673	-0.569
5/6	-0.6148	0.026	-23.590	0.000	-0.666	-0.564
6/7	-0.2800	0.023	-12.374	0.000	-0.324	-0.236
7/8	0.0089	0.023	0.381	0.703	-0.037	0.055
8/9	-0.1796	0.036	-4.996	0.000	-0.250	-0.109

Number of Friends vs. Life Satisfaction

High Levels of Satisfaction have low probabilities in 0-1 and 2-3 friends groups, and high probabilities in 4-5, 6+ friends groups

Conversely, having fewer close friends is associated with higher probabilities of lower satisfaction.

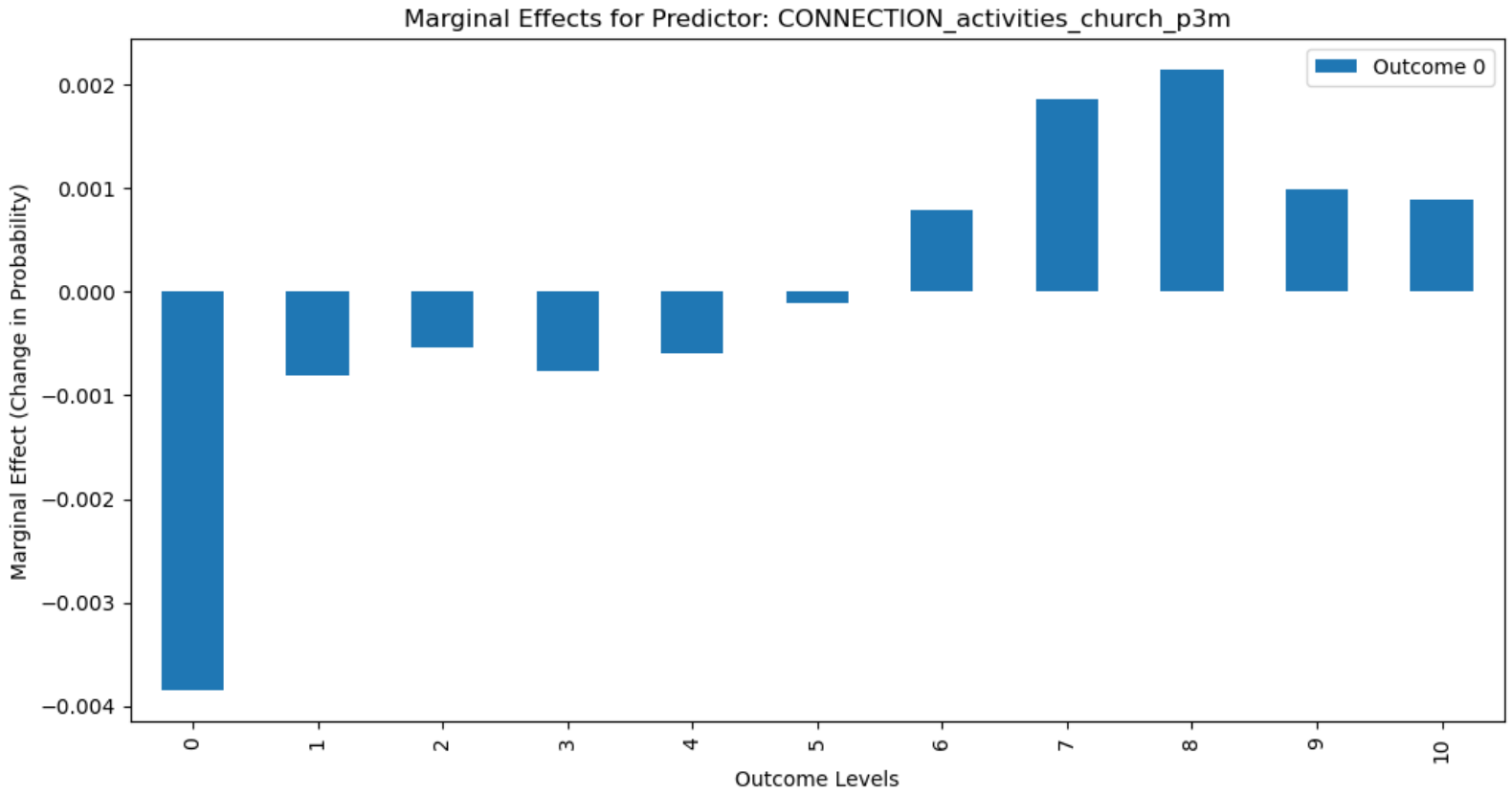
This suggests more connection is linked with more happiness.



Marginal Effects of Church Going

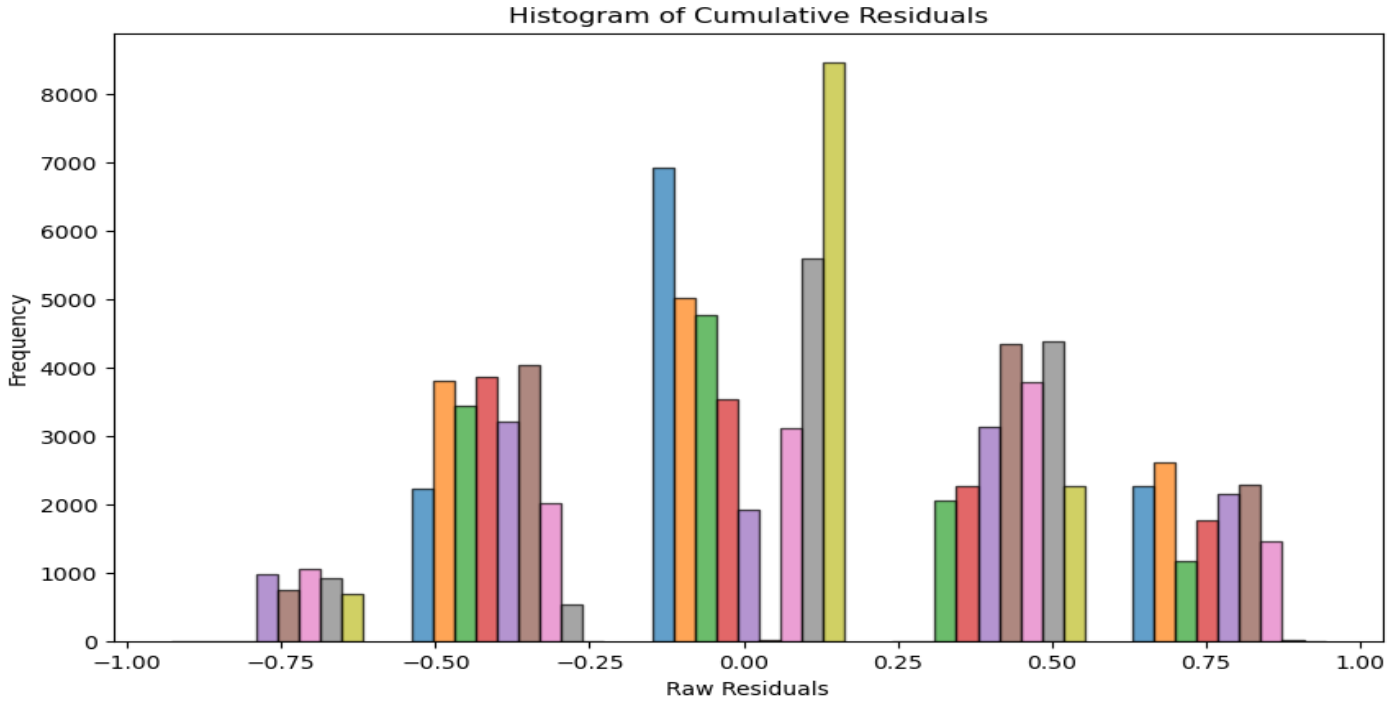
For life satisfaction 6 – 10, church going has a positive effect on probability.

Conversely, life satisfaction is negatively correlated with church going.

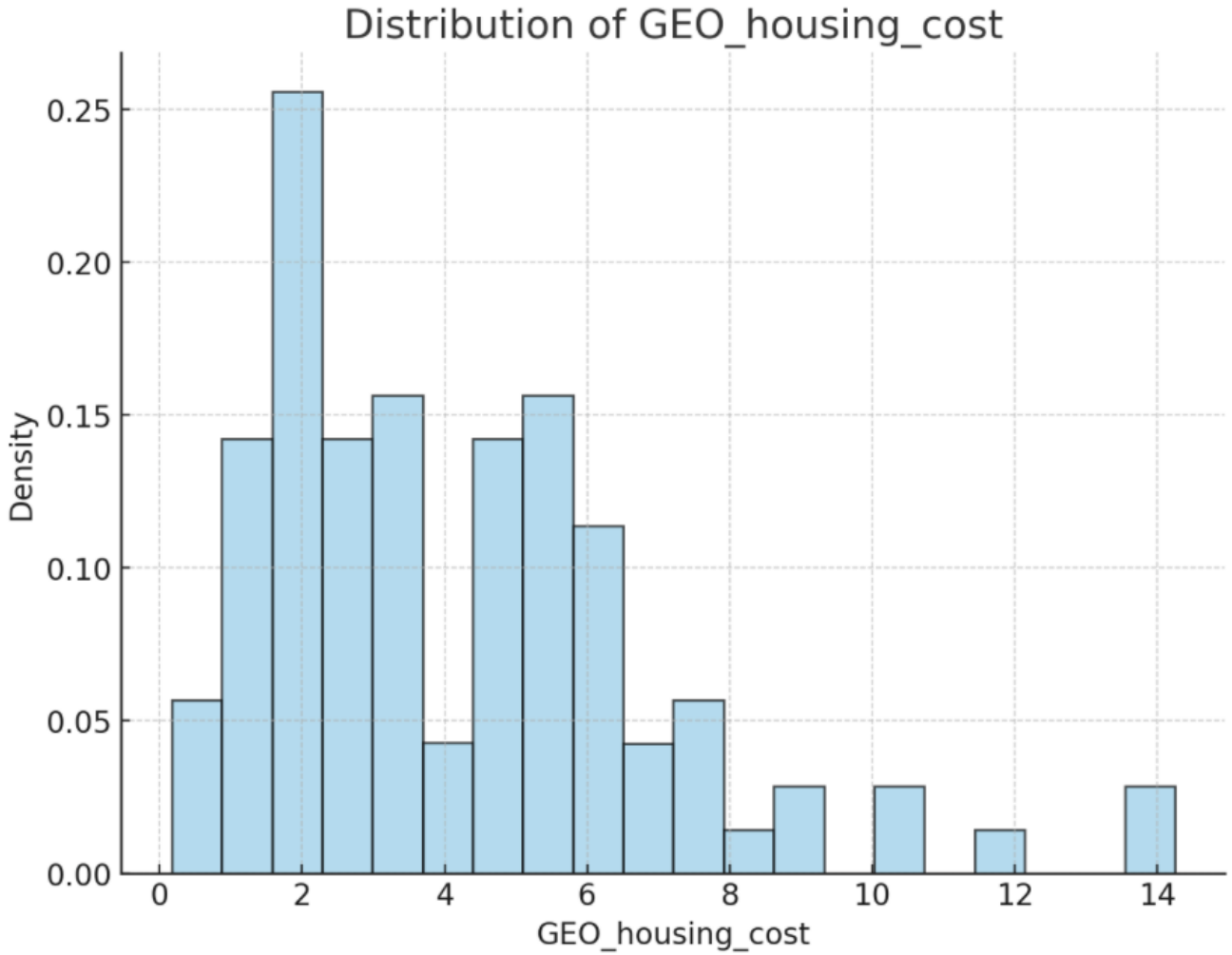


Significance of Findings

- A normal distribution like residuals plot shows

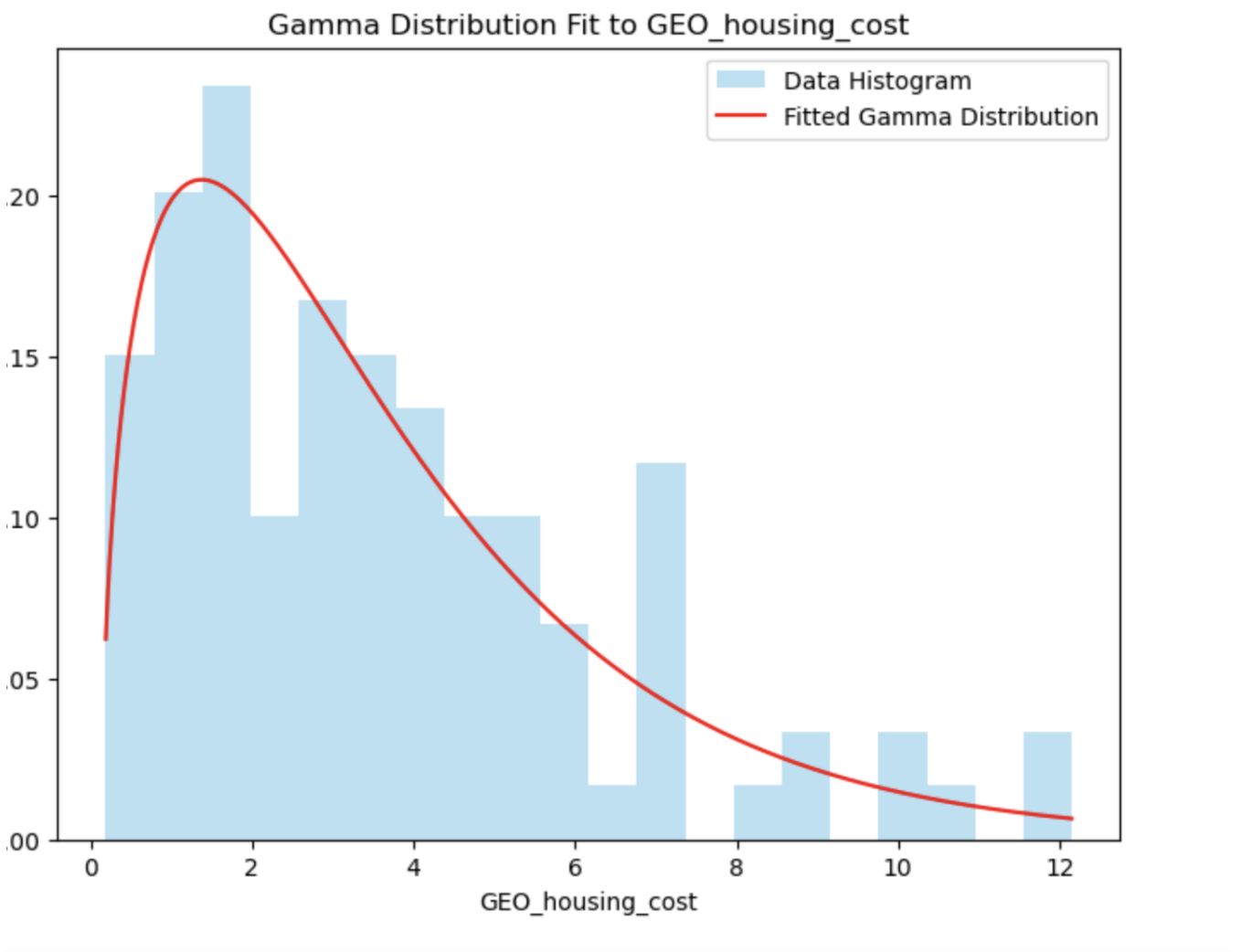


Analysis II:use gamma distribution to fit housing cost

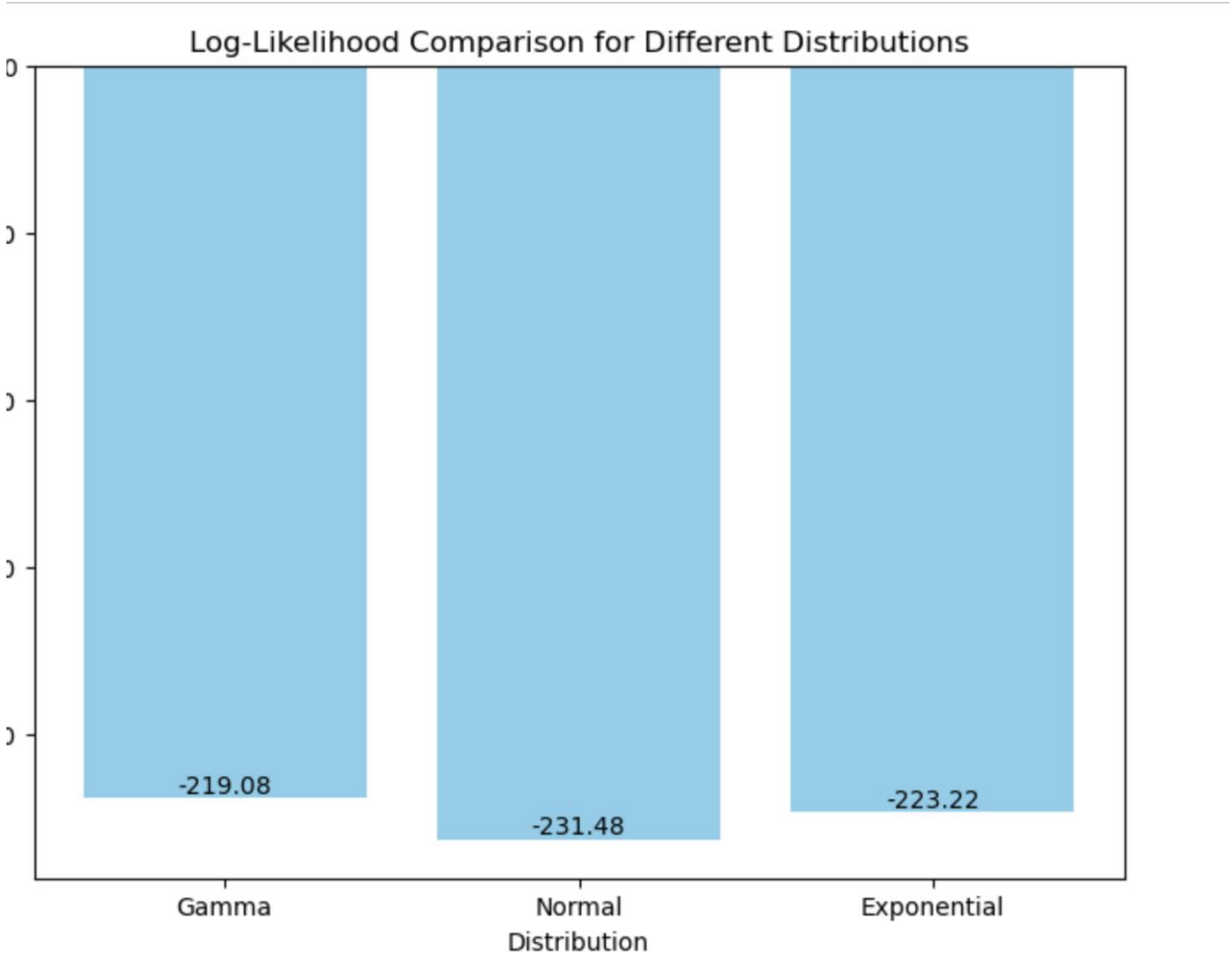


Ploting and model evaluation

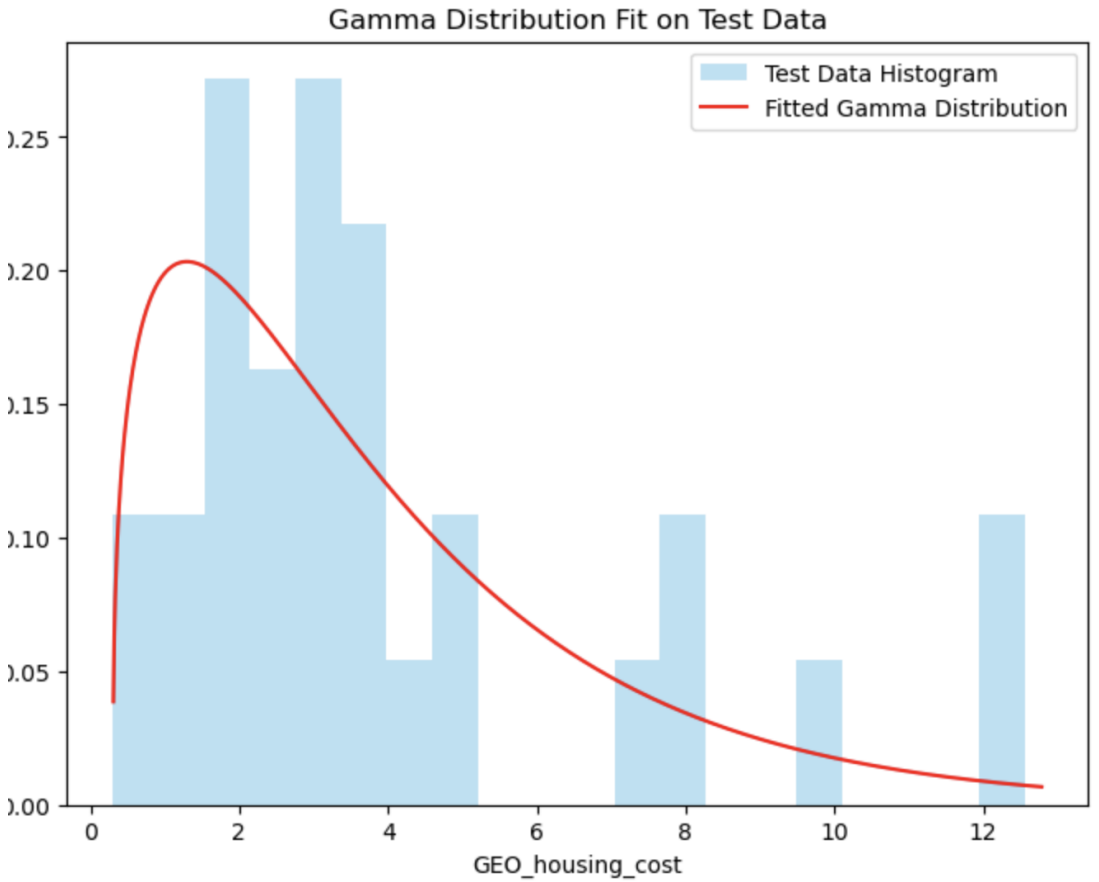
- Gamma Distribution Fit Evaluation:
- Shape (k): 1.5392833698841741
- Location (loc): 0.13724537358370845
- Scale (θ): 2.298553352151517
- MSE (Mean Squared Error): 0.0009408614579409459
- KS Test Statistic: 0.06143097195725983, p-value: 0.8222380420665735
- Log-Likelihood: -221.37795155285139



Comparing with other models



gamma distribution fitted on test data



Check the residuals