

Zero-Inflated Poisson Regression Report

Outcome: absences

Count predictors: G1, G2, studytime, failures, age, health

Inflation predictors: failures, age, health

N: 649

Observed zeros: 244 (37.60%)

ZIP log-likelihood: -1683.239912

ZIP AIC: 3388.479824

Poisson AIC: 4674.756356

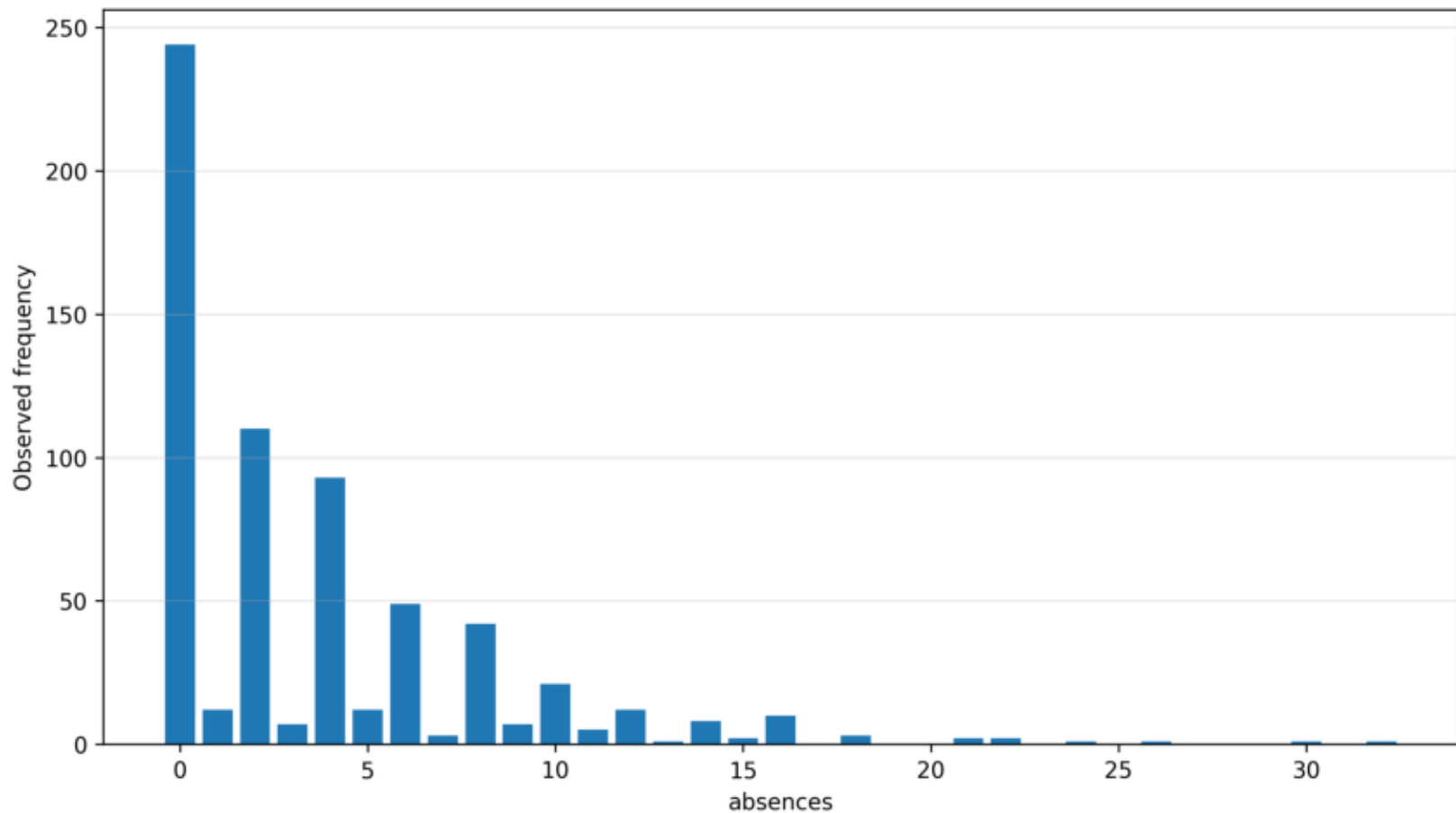
Vuong z: 12.043348

Vuong p-value: 2.10247e-33

Decision: ZIP is favored by AIC

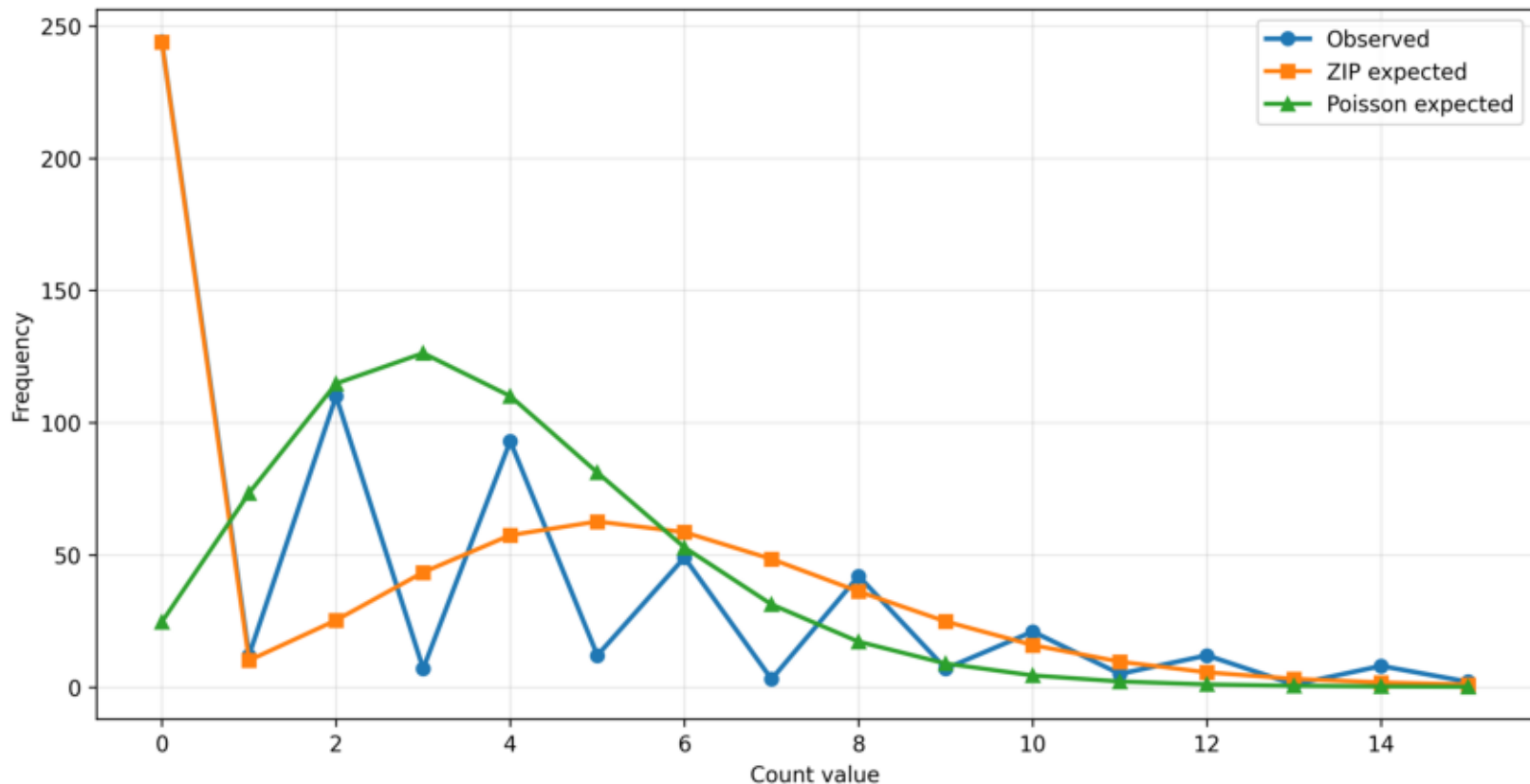
Observed Count Distribution

The zero bar shows the amount of observed zero counts in the outcome.



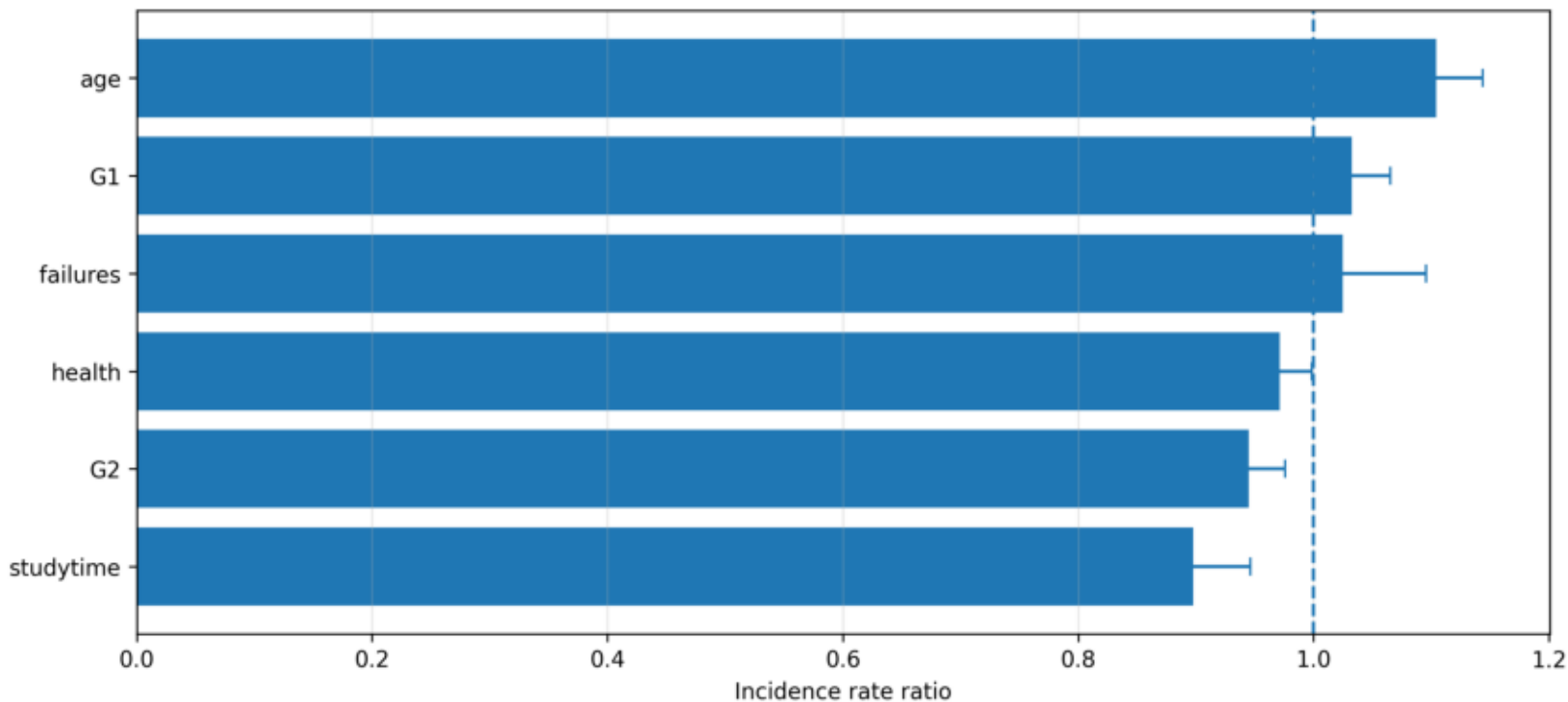
Observed and Expected Count Frequencies

ZIP explicitly models excess zeros while retaining a Poisson count component.



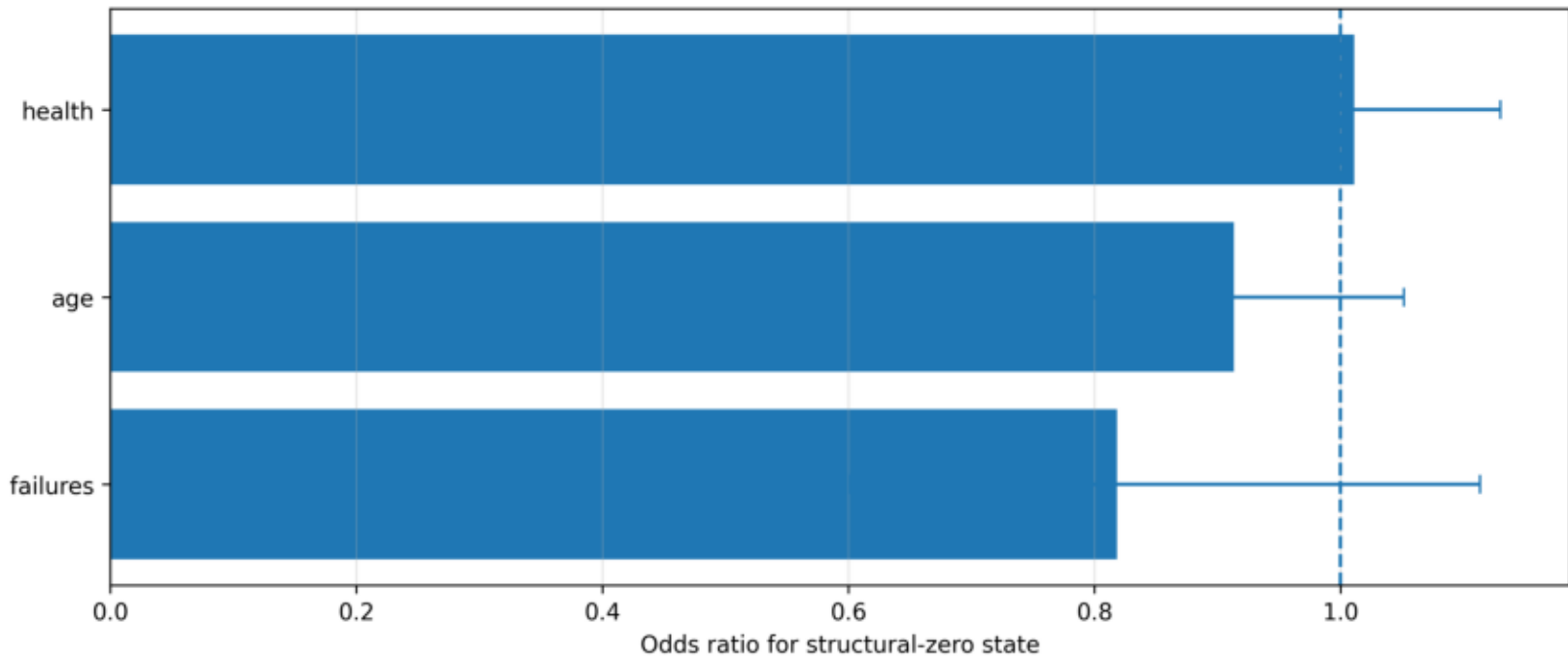
Count-Component Incidence Rate Ratios

Values above one increase the expected count; values below one reduce it.



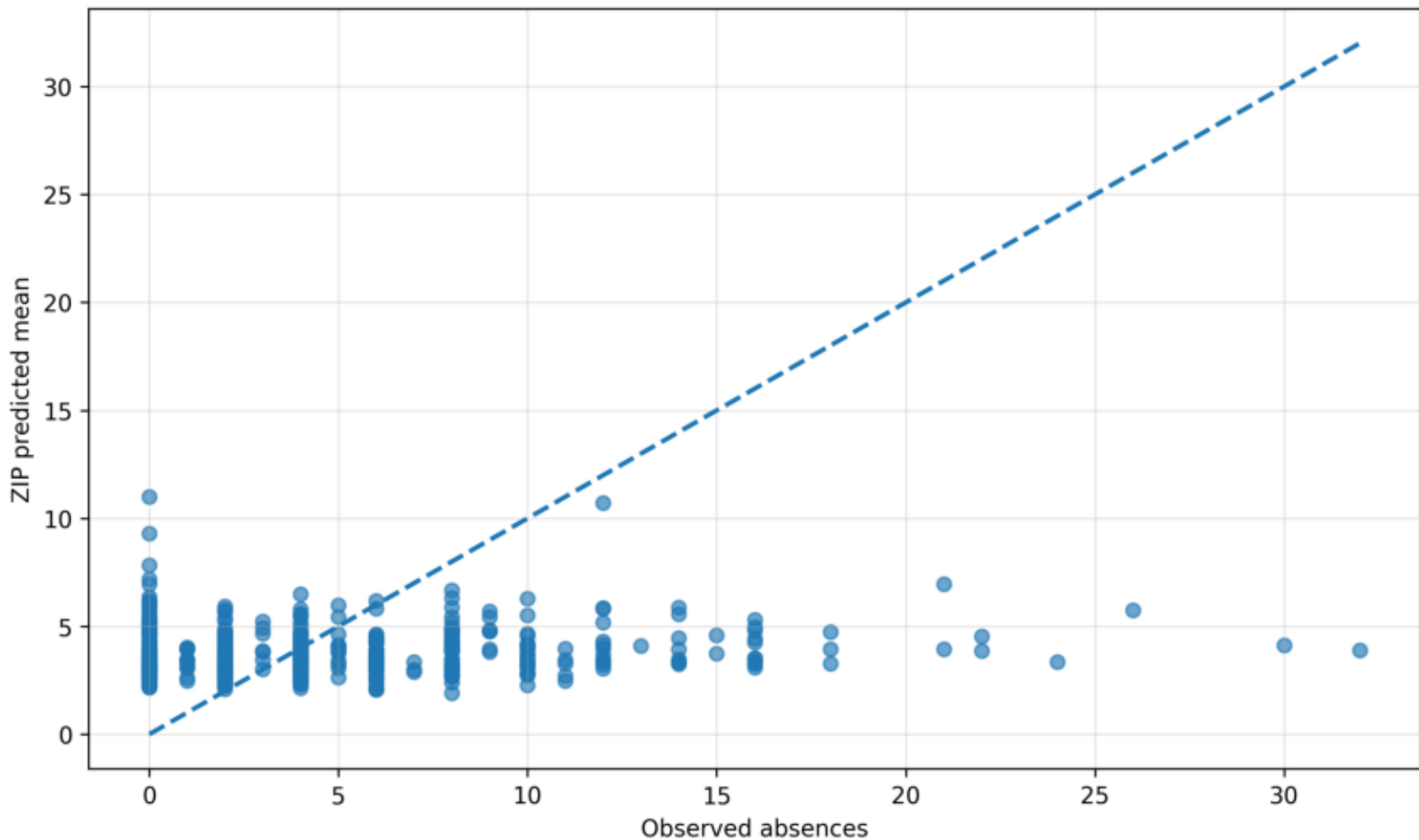
Inflation-Component Odds Ratios

Values above one increase the odds of belonging to the structural-zero state.



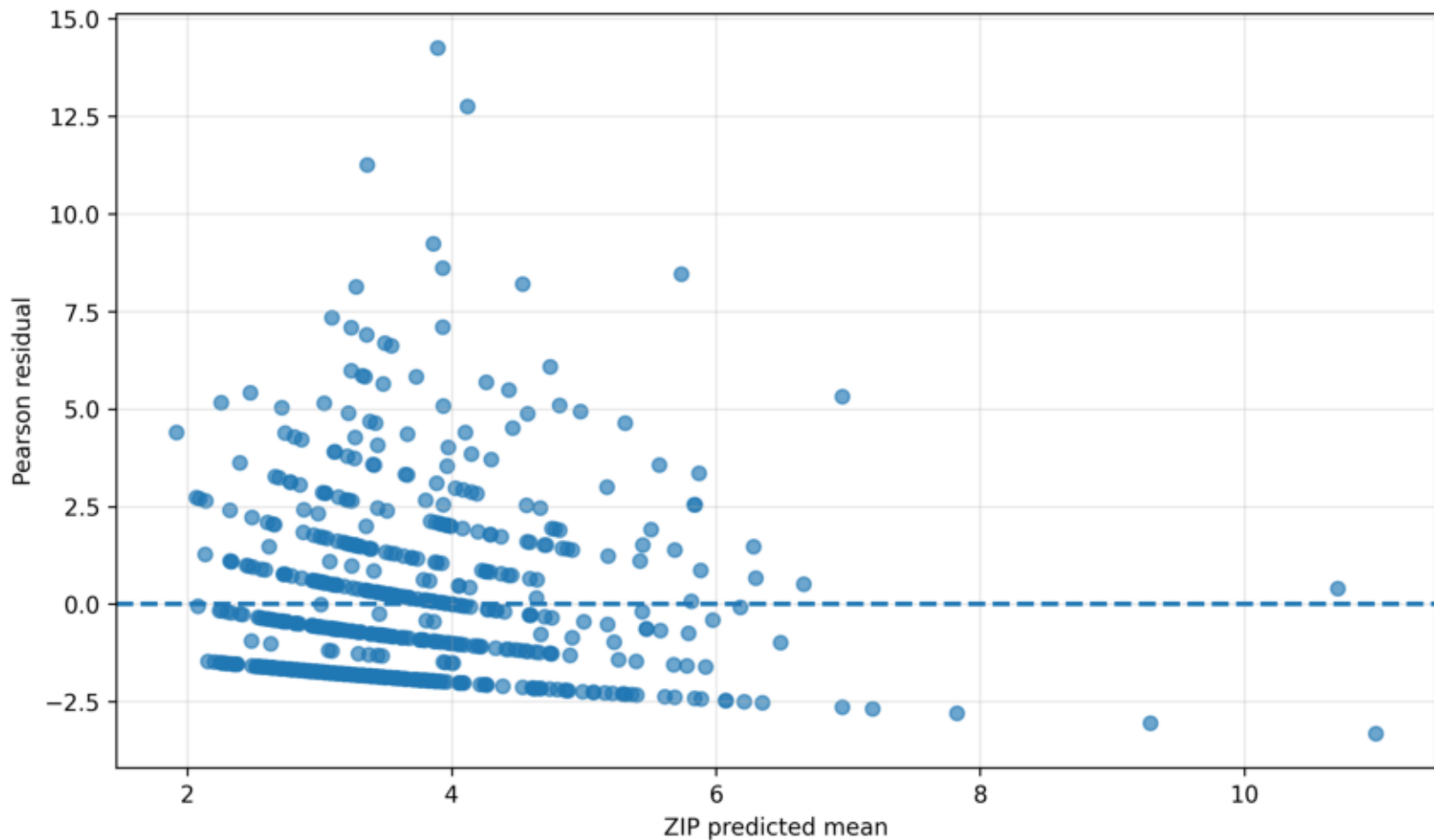
Observed versus ZIP Predicted Counts

Predicted means combine the count and inflation components.



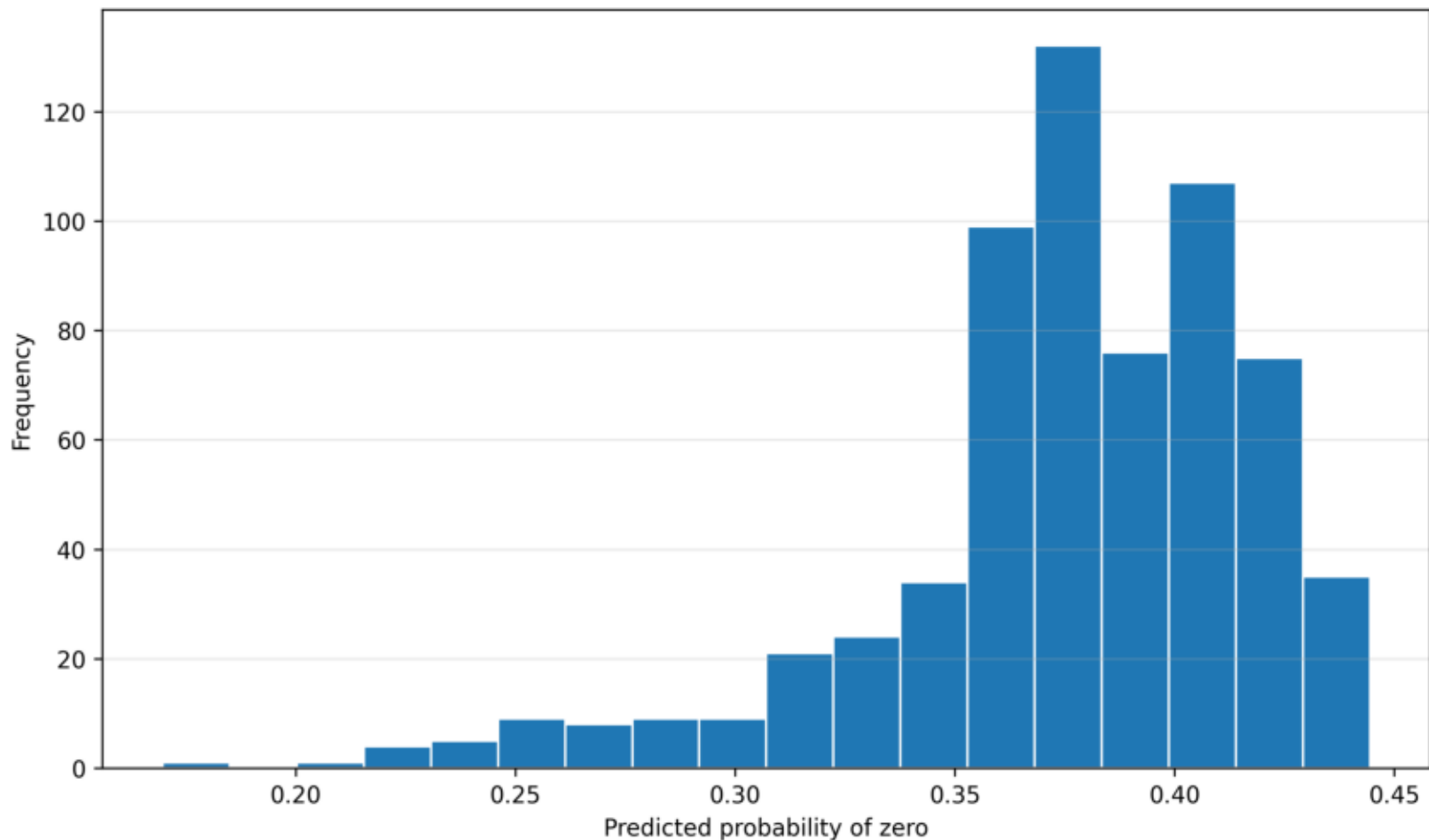
ZIP Pearson Residuals versus Predicted Mean

A random band around zero supports model adequacy.



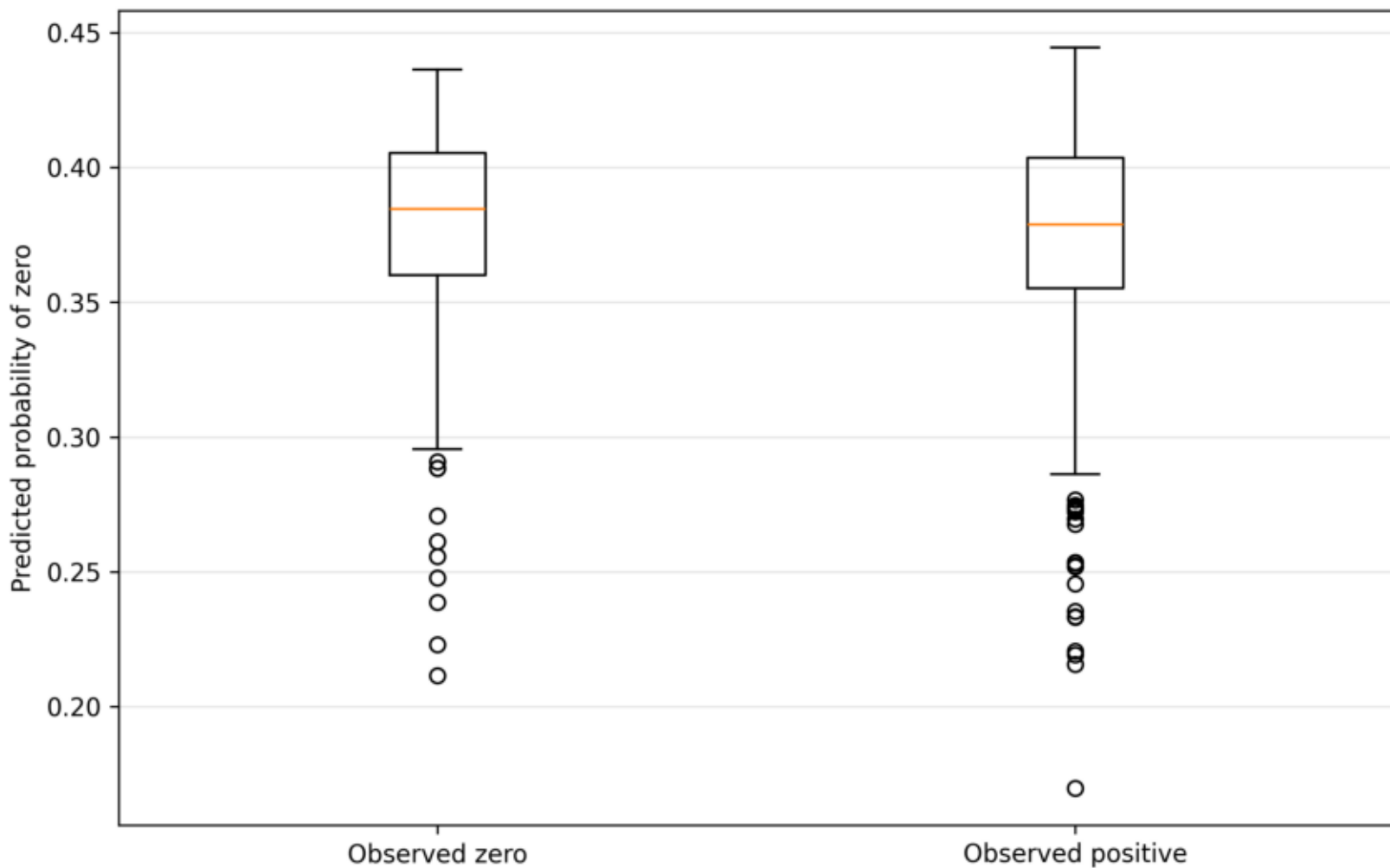
Predicted Zero Probabilities

The ZIP zero probability includes both structural and sampling zeros.



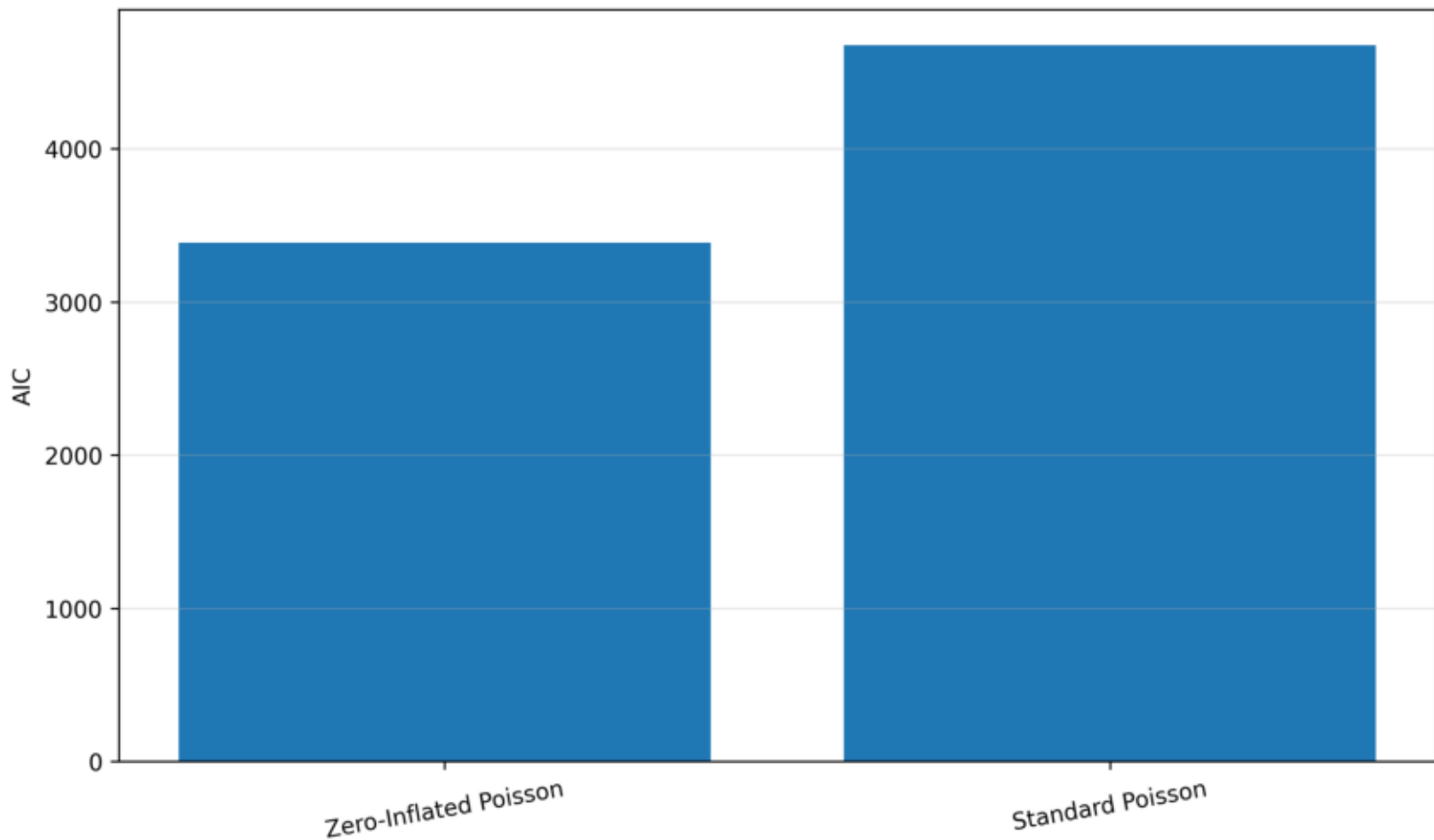
Predicted Zero Probability by Observed Status

A useful model generally assigns larger zero probabilities to observed zeros.



ZIP versus Standard Poisson AIC

Lower AIC indicates a better fit-complexity balance.



Zero-Inflated Poisson Regression Summary

The model contains a Poisson count equation and a logit zero-inflation equation.

Statistic	Value
Outcome	absences
Count predictors	G1, G2, studytime, failures, age, health
Inflation predictors	failures, age, health
N	649
Observed zeros	244 (37.60%)
ZIP log-likelihood	-1683.239912
ZIP AIC	3388.479824
Poisson AIC	4674.756356
Vuong z	12.043348
Vuong p-value	2.10247e-33
Decision	ZIP is favored by AIC