

Coin-Data Regression Study

Regression Methods Project

By Rayan Harfouche & Tara Fjellman

Fall 2024

Abstract

- context of the original paper (with their claims)
- our addition/contribution/comment about it

1 Introduction

- unbalanced dataset
- number of people and coins
- few people with many coins and few coins with many people
- inspection of same side rates show sign of possible person, coin and person-coin dependence
- mention the datasets that we used (with information in them)
- brief mention of types of models (GLM vs WLS and person-coin etc.). no formula, but description

2 Analysis

2.1 Model Comparison

In this section, we introduce and compare different models for the same side success rate. Some GLMs with binomial responses and some WLS ones based on the ... approximation. Should explain no a priori response transformation ...

For each, the considered formulas in terms of the covariates are:

- 1, corresponding to a constant model.
- $1+C(\text{person})$, corresponding to a model with the person as a covariate.
- $1+C(\text{person})+C(\text{coin})$, corresponding to a model with the person and the coin as covariates.
- $1+C(\text{person})+C(\text{coin})+C(\text{person}):C(\text{coin})$, corresponding to a model with the person, the coin, and the interaction between the person and the coin as covariates.

* model 4 could seem redundant due to nesting-main effect, but we *

Should explain why eliminated some covariates ...

2.1.1 WLS Approach

2.1.2 GLM Approach

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum. Lorem ipsum dolor sit amet, consectetur adipiscing elit.

Tab 1: *Model comparison for different models.*

Model	Deviance	AIC	Model DF
1	3943.48	173.97	0
1+C(person)	3677.51	0.00	46
1+C(person)+C(coin)	3611.12	17.61	88

Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Tab 2: *Likelihood ratio tests between models.*

Tested model	Restricted model	<i>p</i> -value
1+C(person)	1	0.00e+00
1+C(person)+C(coin)	1+C(person)	9.61e-03

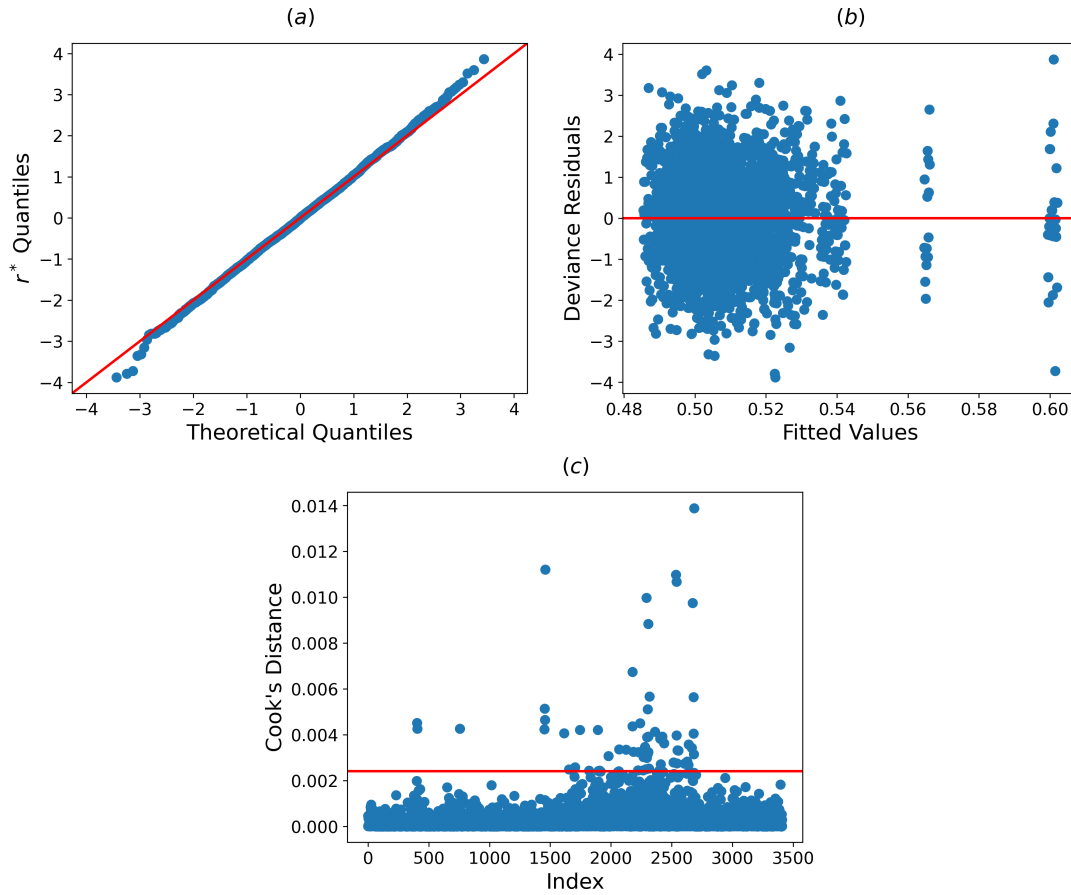


Fig 1: *Diagnostics for the selected GLM model. (a).*

2.2 Unusual Observations

2.3 Learning Effects

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

2.4 Memory Effects ??

3 Discussion

4 Conclusion

Acknowledgements

References

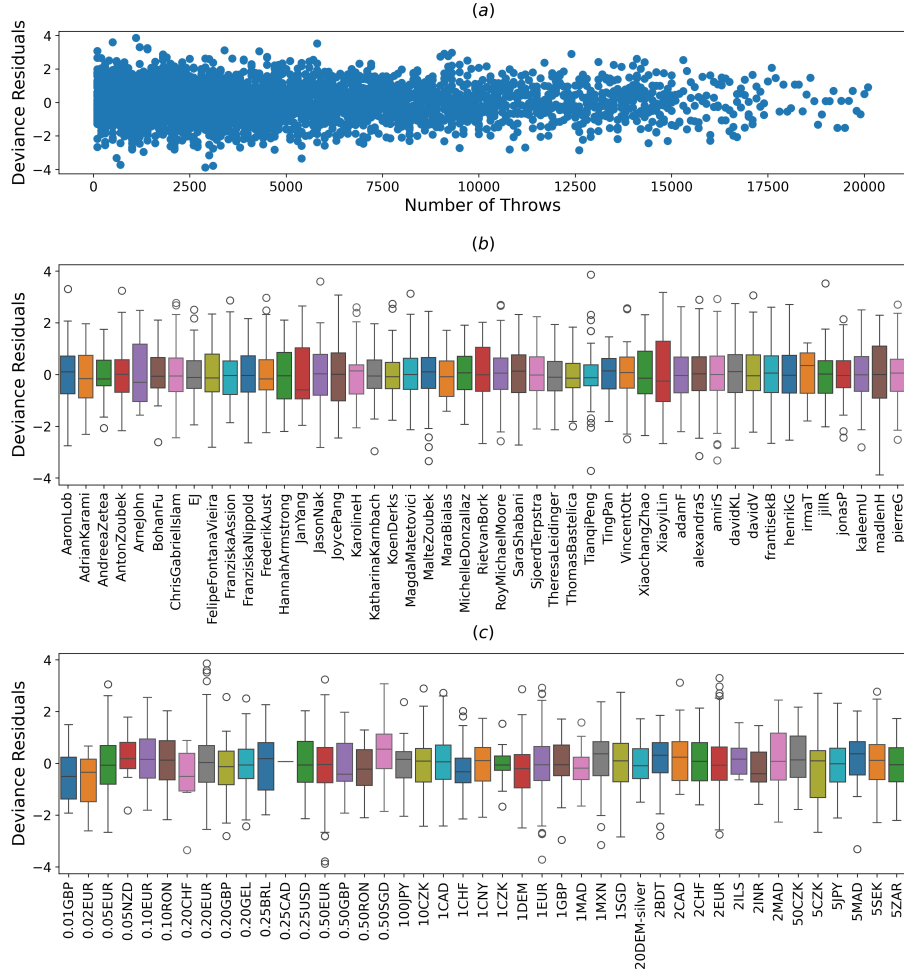


Fig 2: Dev-resid as a function of (a) person and (b) coin.

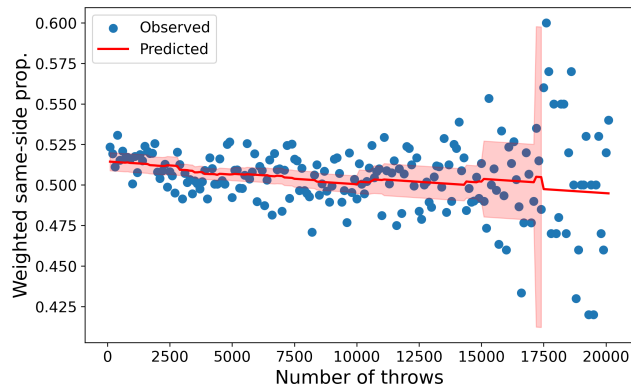


Fig 3: Learning effects.