¡¡¡¡¡¡¡ HEAD **Statistical Coin Study**

Regression Methods

======= **Coin-Data Regression Study**

Regression Methods Project

¿¿¿¿¿¿¿ 89d664ea2c5b851e9bd4b8dc11130acbb147cce6 By Rayan Harfouche & Tara Fjellman

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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(person)`, corresponding to a model with the person as a covariate.
- `1+C(person)+C(coin)`, corresponding to a model with the person and the coin as covariates.
- `1+C(person)+C(coin)+C(person):C(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 Tools For Selection

- when to use AIC vs LRT ?
- citing a few things about LRT not miting overfitting
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2.1.2 WLS Approach

2.1.3 GLM Approach

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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

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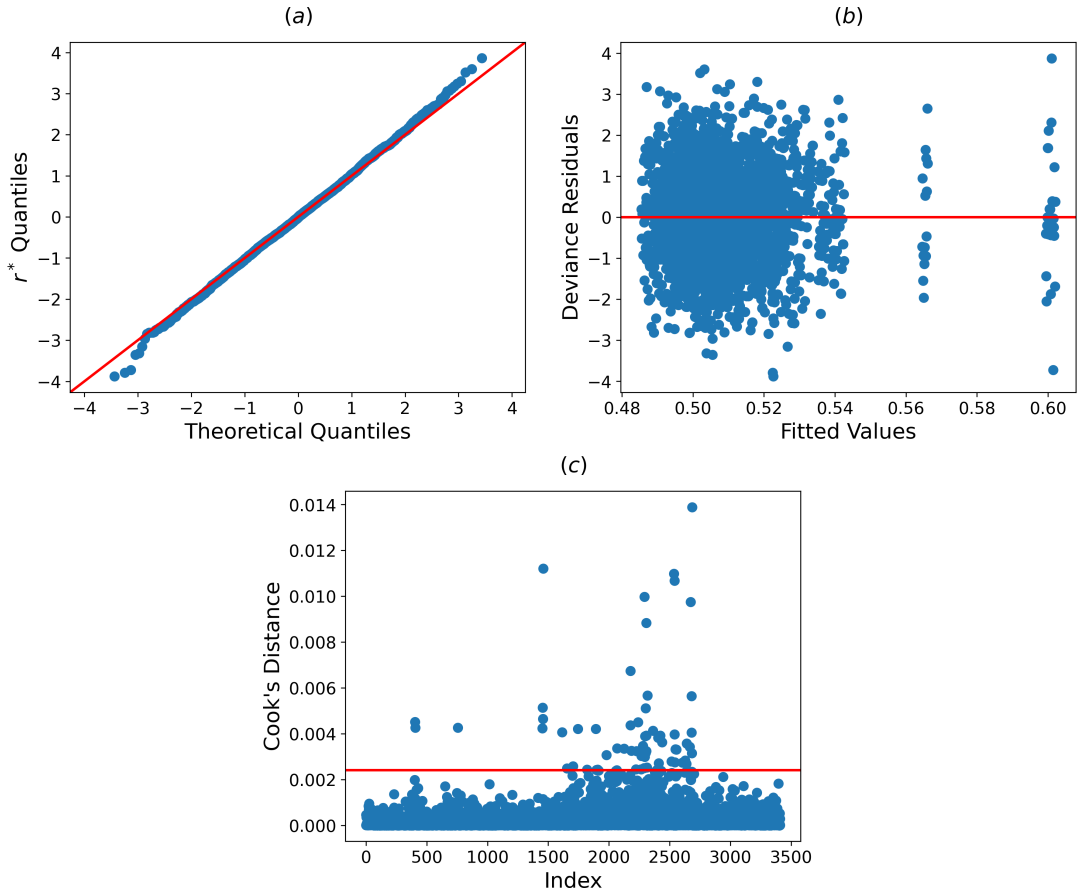

Fig 1: *Diagnostics for the selected GLM model. (a).*

Tab 2: *Likelihood ratio tests between models.*

Tested model	Restricted model	p-value
`1+C(person)`	`1`	0.00e+00
`1+C(person)+C(coin)`	`1+C(person)`	9.61e-03

2.2 Unusual Observations

2.3 Zoom on Learning Effects

- bias comes from start
- amount of bias (considerable)
- wobble interpretation (consistent with physical model, citing the paper)

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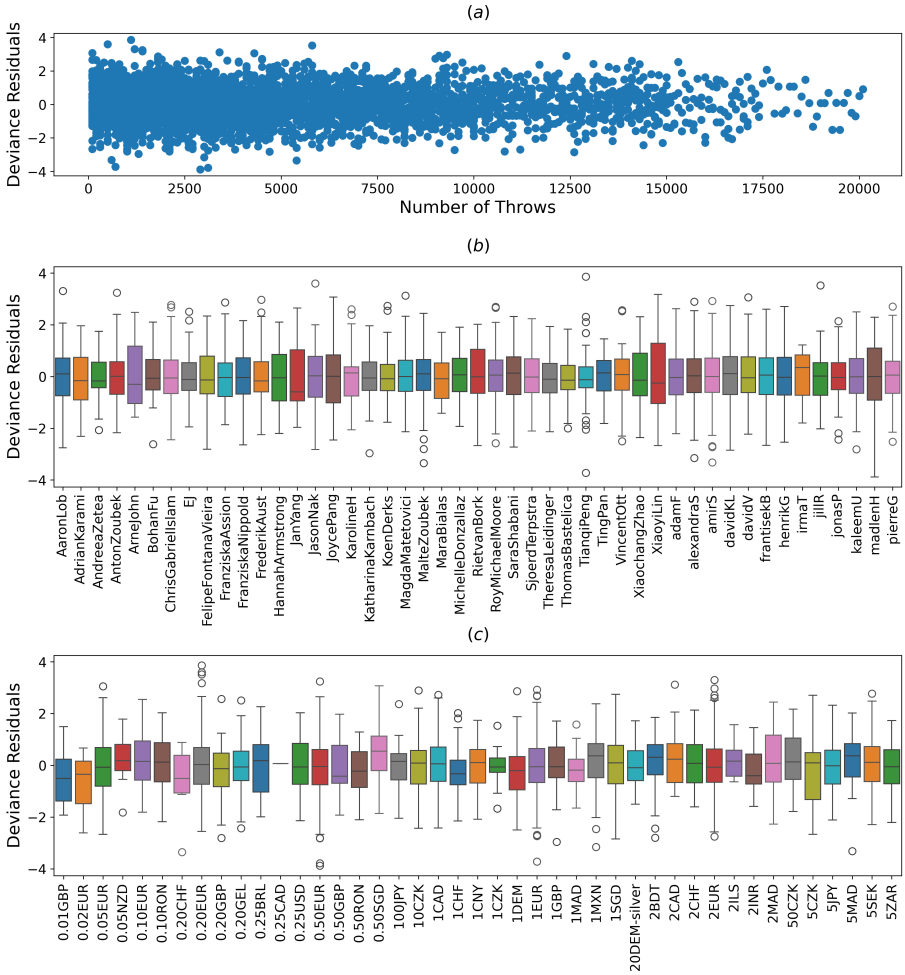

Fig 2: *Dev-resid as a function of (a) person and (b) coin.*

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2.4 Memory Effects ??

3 Discussion

4 Conclusion

Acknowledgements

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References

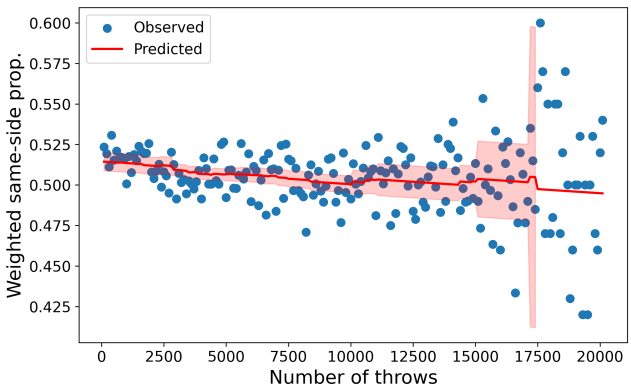

Fig 3: *Learning effects.*