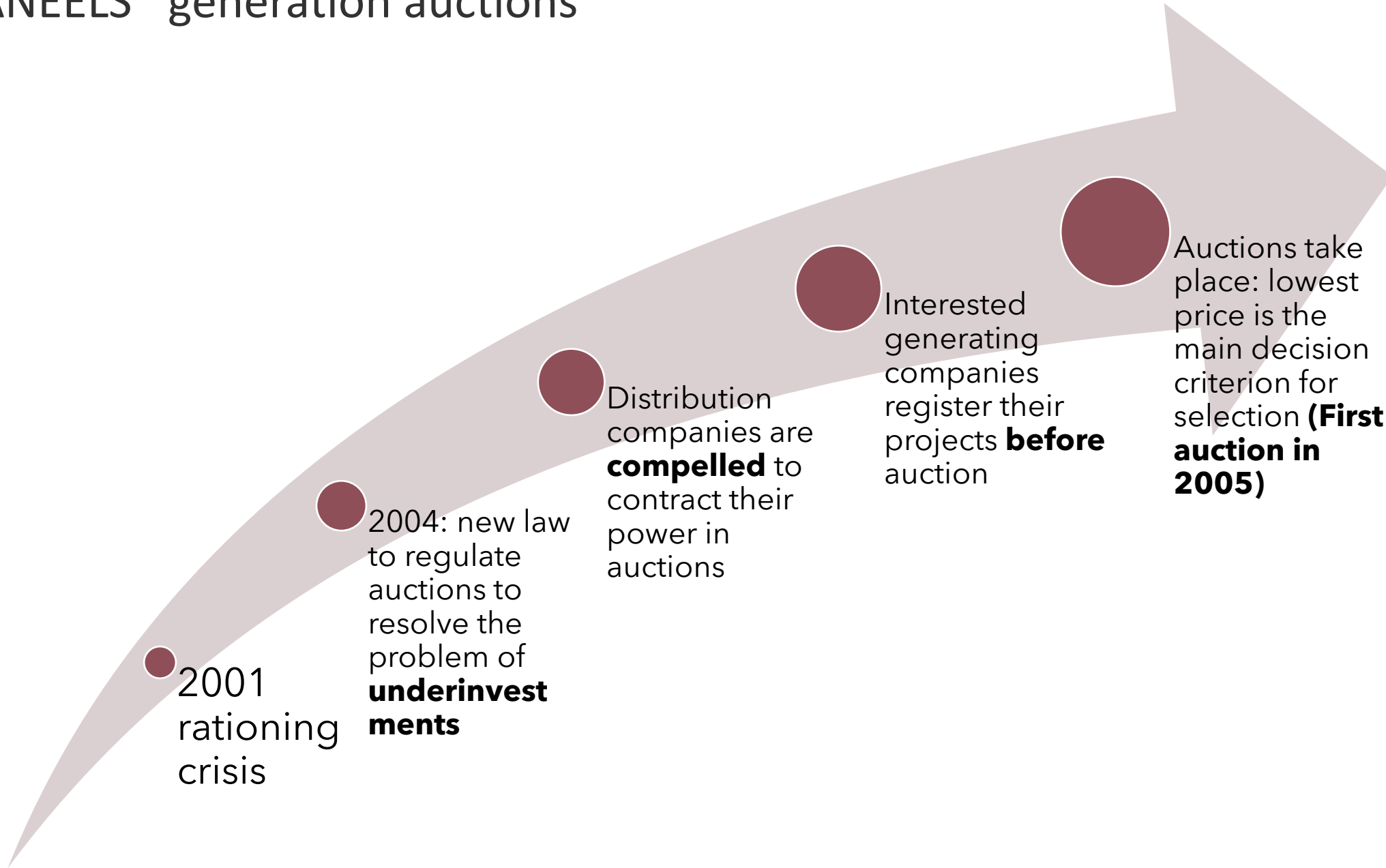




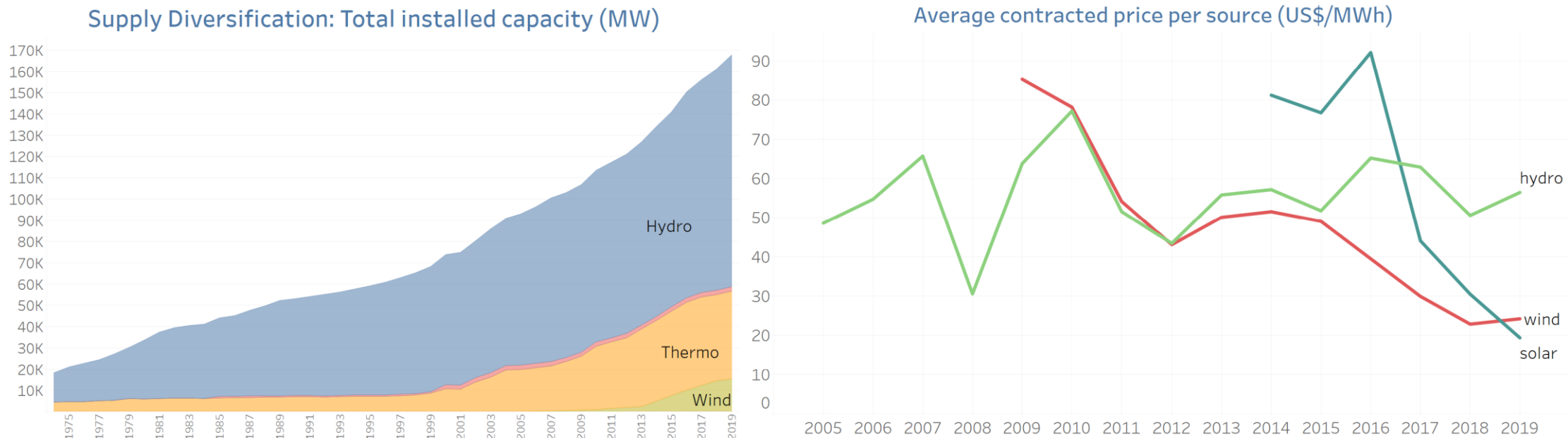
Assessment of Brazil's electricity generation auctions

FRANCISCO EBELING - FINAL IRONHACK DATA ANALYTICS
BOOTCAMP PROJECT - MAY 2021

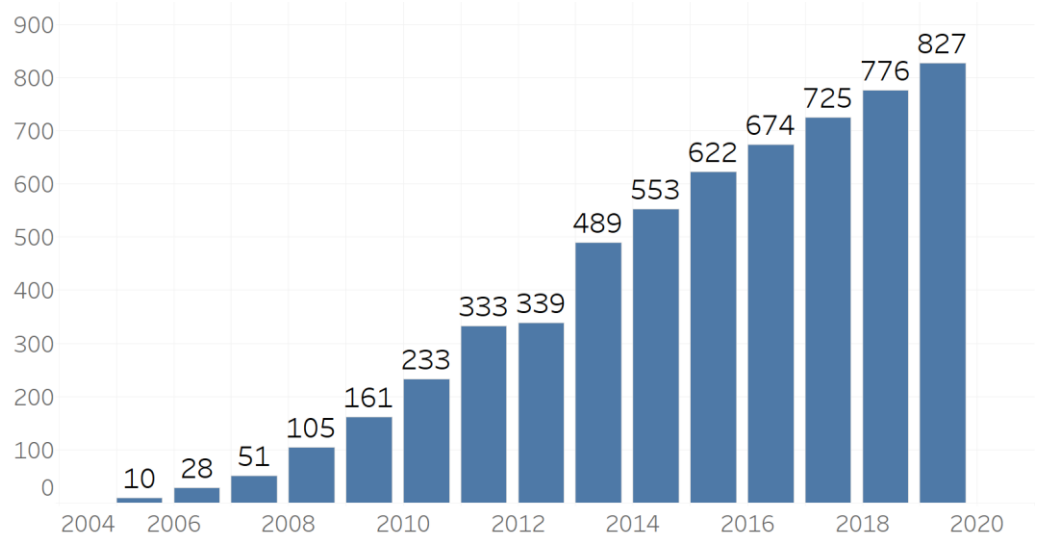
ANEELS ' generation auctions



The auctions' achievements

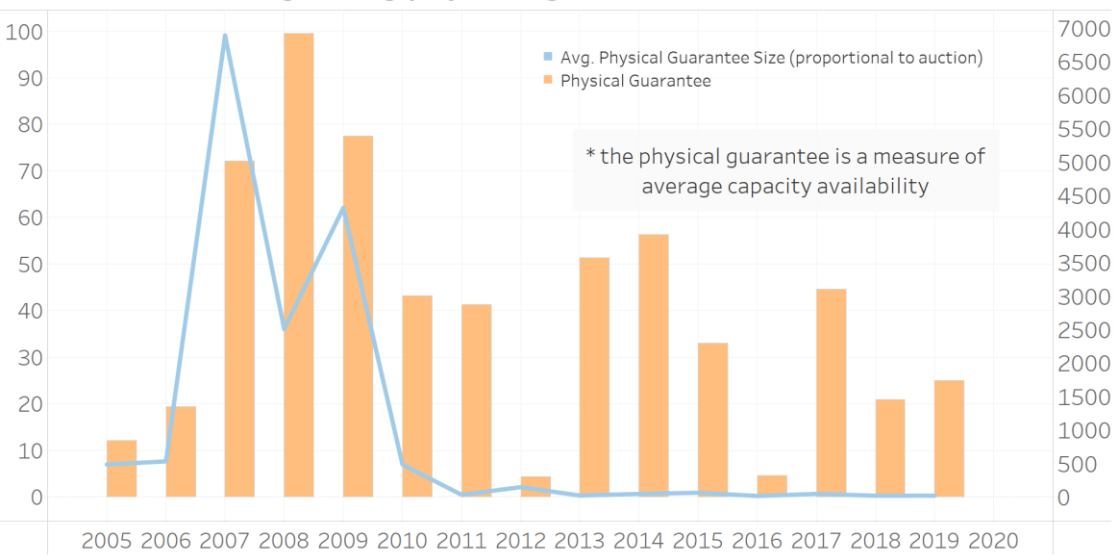


Number of unique companies/consortia attracted

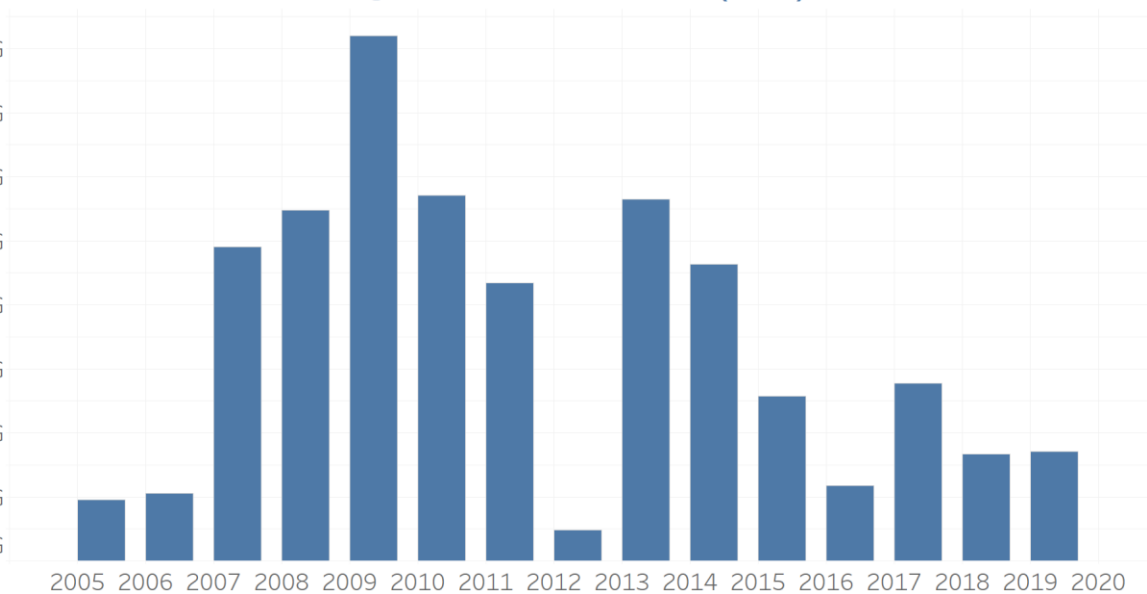


But there are still many uncertainties...

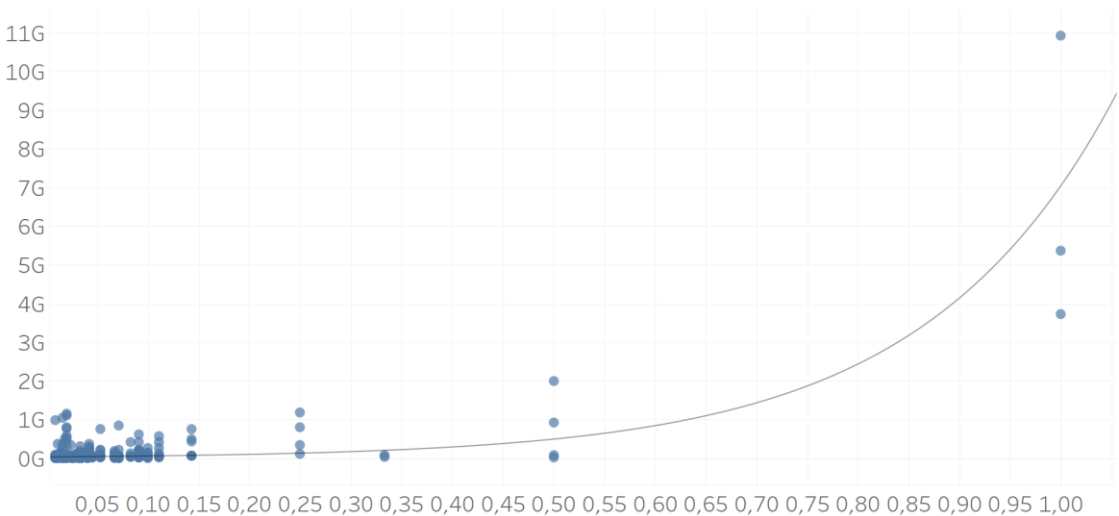
Stagnating physical guarantee* additions



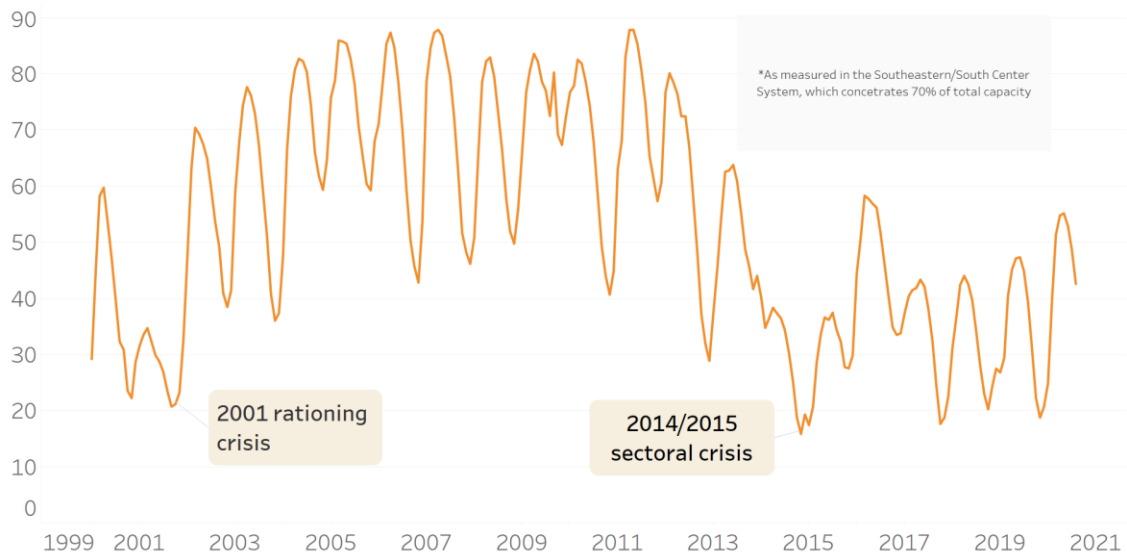
Stagnated investments (US\$)



Proportion of selected bids to total bids in auction vs Investments (US\$)



Dramatic oscillations in reservoir levels*



Modelling exercises

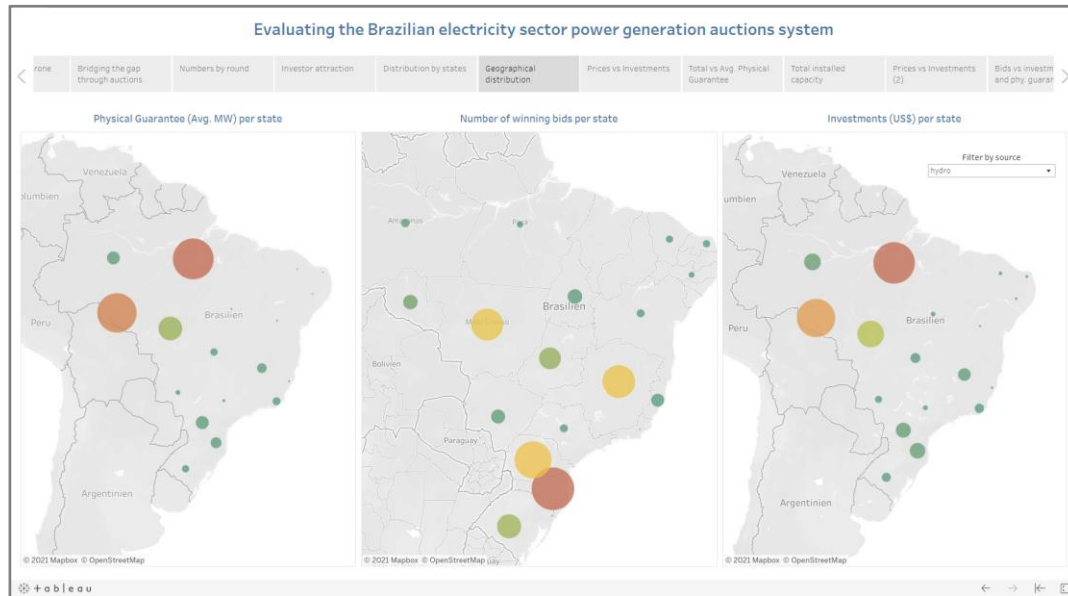
- The hypothesis: the auction system has managed to minimize systemic risk of faltering security of electricity supply but does not maximize sectoral investments
- Testing the hypothesis (I): through RF multiclass classification models, I predict the likely profile of a next auction in terms of investments (US\$), physical guarantee (Avg. MW), and number of winning bids per auction (bonus: state and source)
- Data set: ANEEL's compilation of auctions' results
- Three first are grouped in classes by creating bins/ranges: **"A" is the class with lowest investments, physical guarantee and no. of auctions**
- To avoid the problem of data unbalancedness: `class_weight='balanced'`

Variable	Result	Use bins?	Accuracy
Investments (US\$)	A (61%), B (30%), C (5%), D (2%)	Yes	0.727
Physical guarantee	A (82%), B (10%), C (6%), D (2%)	Yes	0.907
Number of selected plants per auction	A [0-2) - 1%, B [2 - 25) - 17%, C [25 - 50) - 35%, D [50 - 75) - 43%, E (75-100] - 3%,	Yes	0.871
State	Northeastern state (BA, RN, CE, PI, PB) - 56%	No	0.581
Source	Wind (66%), Solar (13%)	No	0.906

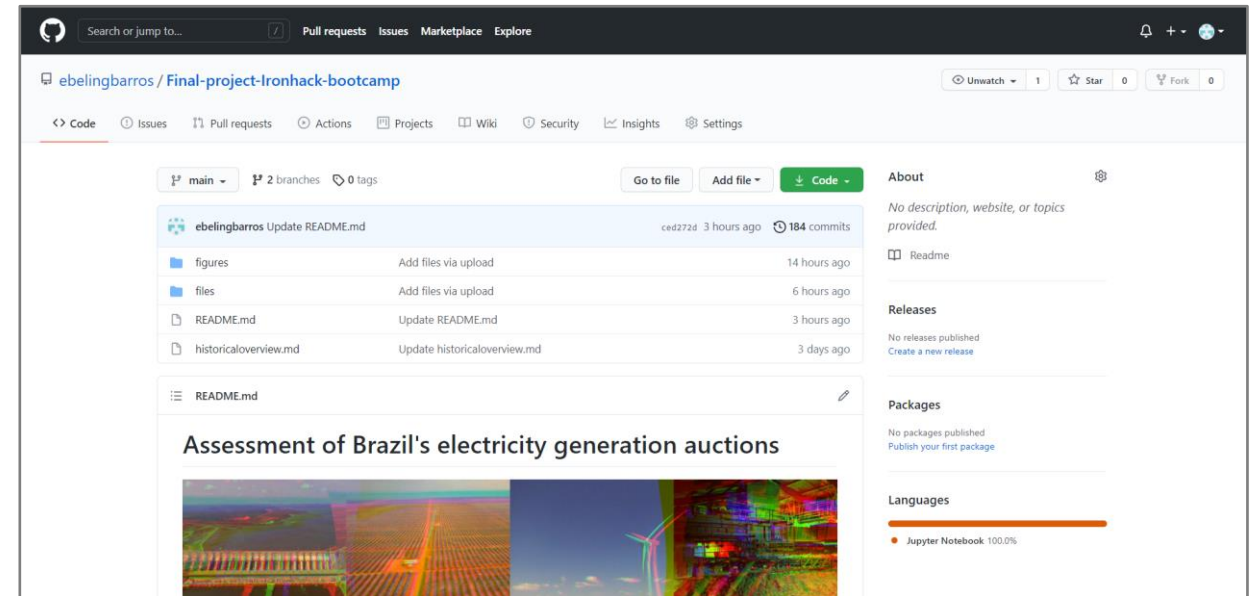
Probability of low physical guarantee (A, B) \cap Probability medium to large number of selected plants per auction (C, D, E) ~ 75%*

Probability of high investments (C or D) \cap Probability low selected plants per auction (A, B) ~ 1%*

***estimates are highly dependent on the binning choices**



<https://public.tableau.com/profile/francisco.ebeling#!/>



<https://github.com/ebelingbarros/Final-project-Ironhack-bootcamp>

Thanks for your attention!

ANY QUESTIONS? EBELINGBARROS@GMAIL.COM