

# WEALTH TRANSFER IN AN ECONOMY WITH TWO SOCIAL GROUPS

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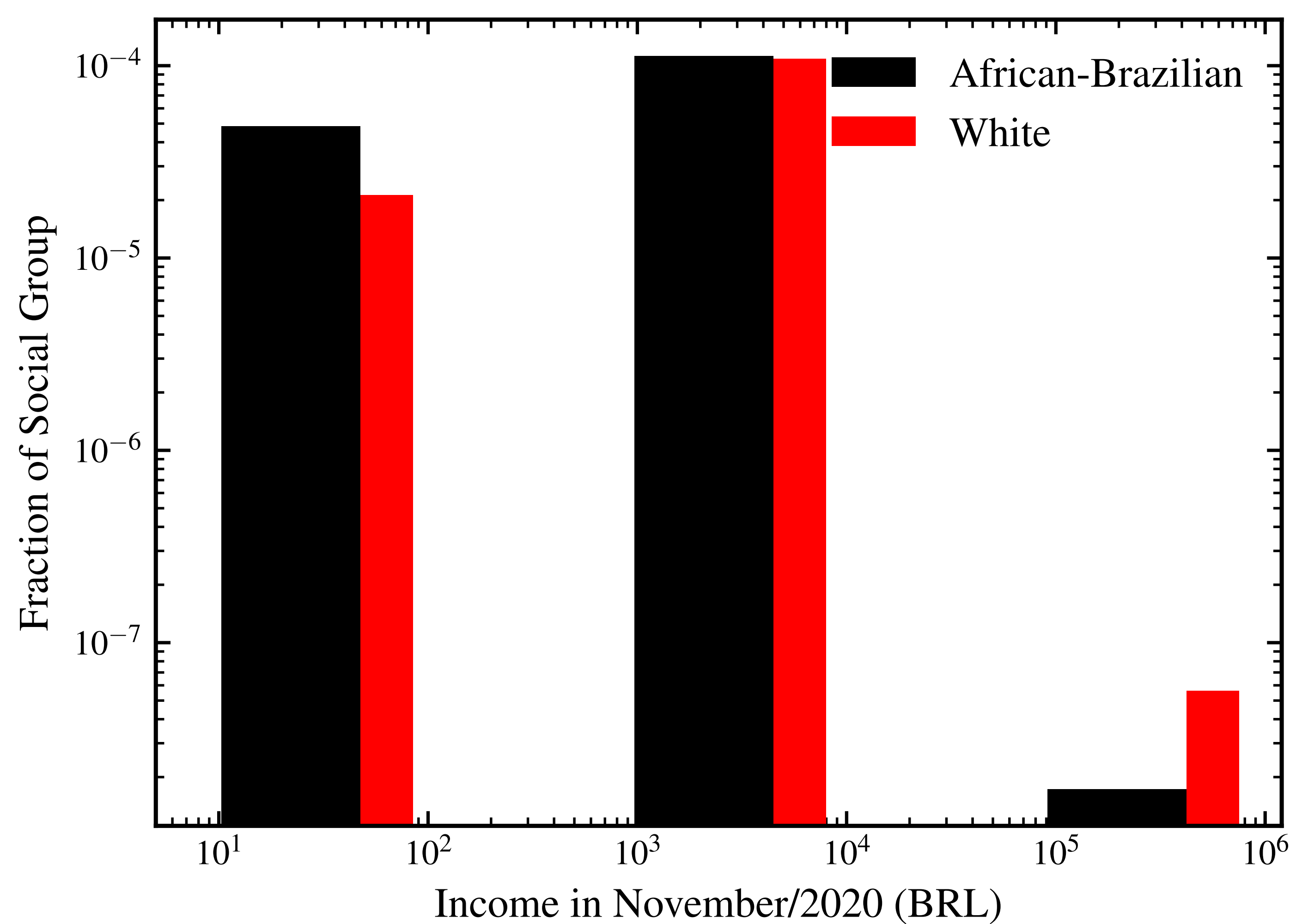
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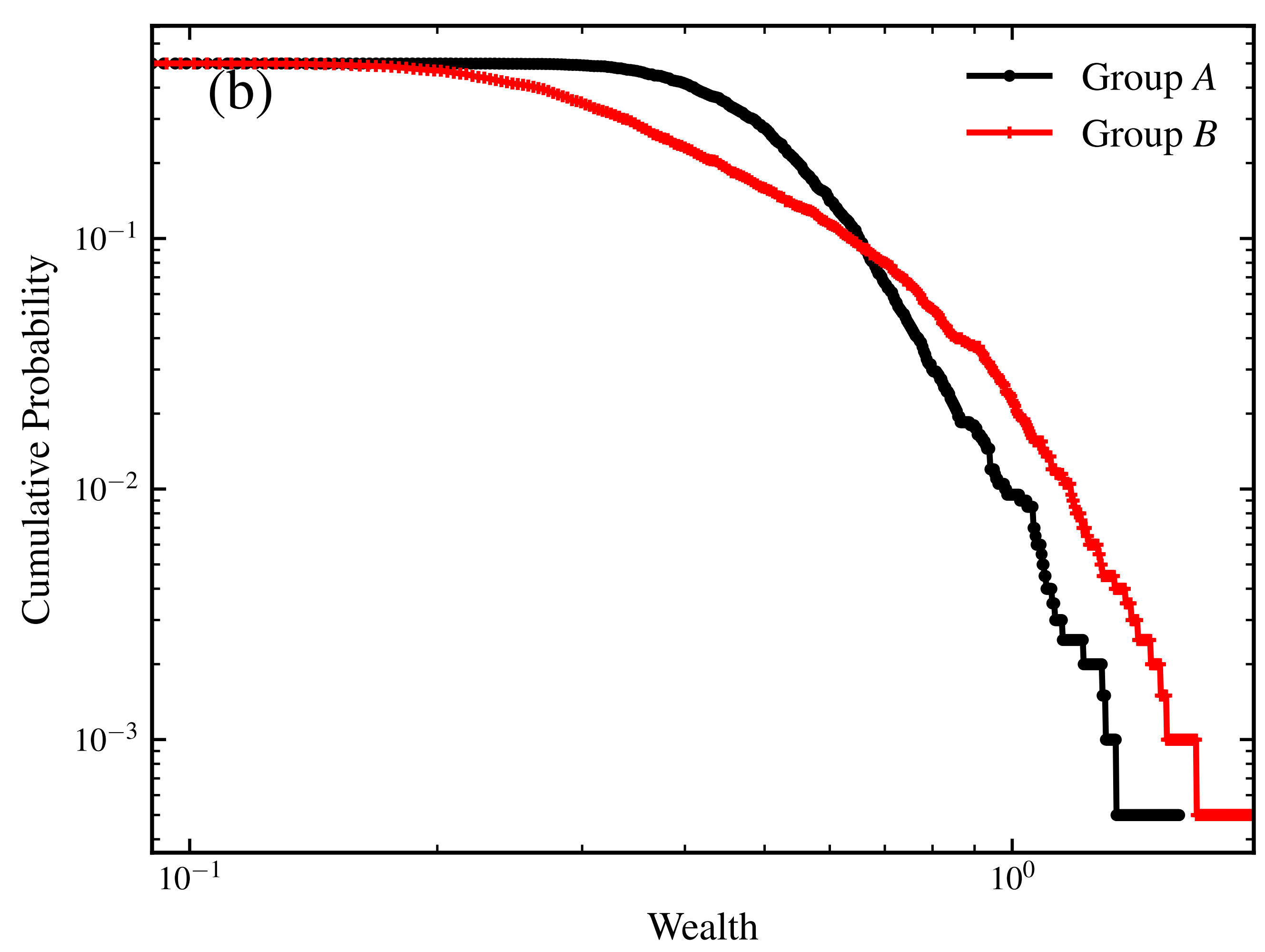
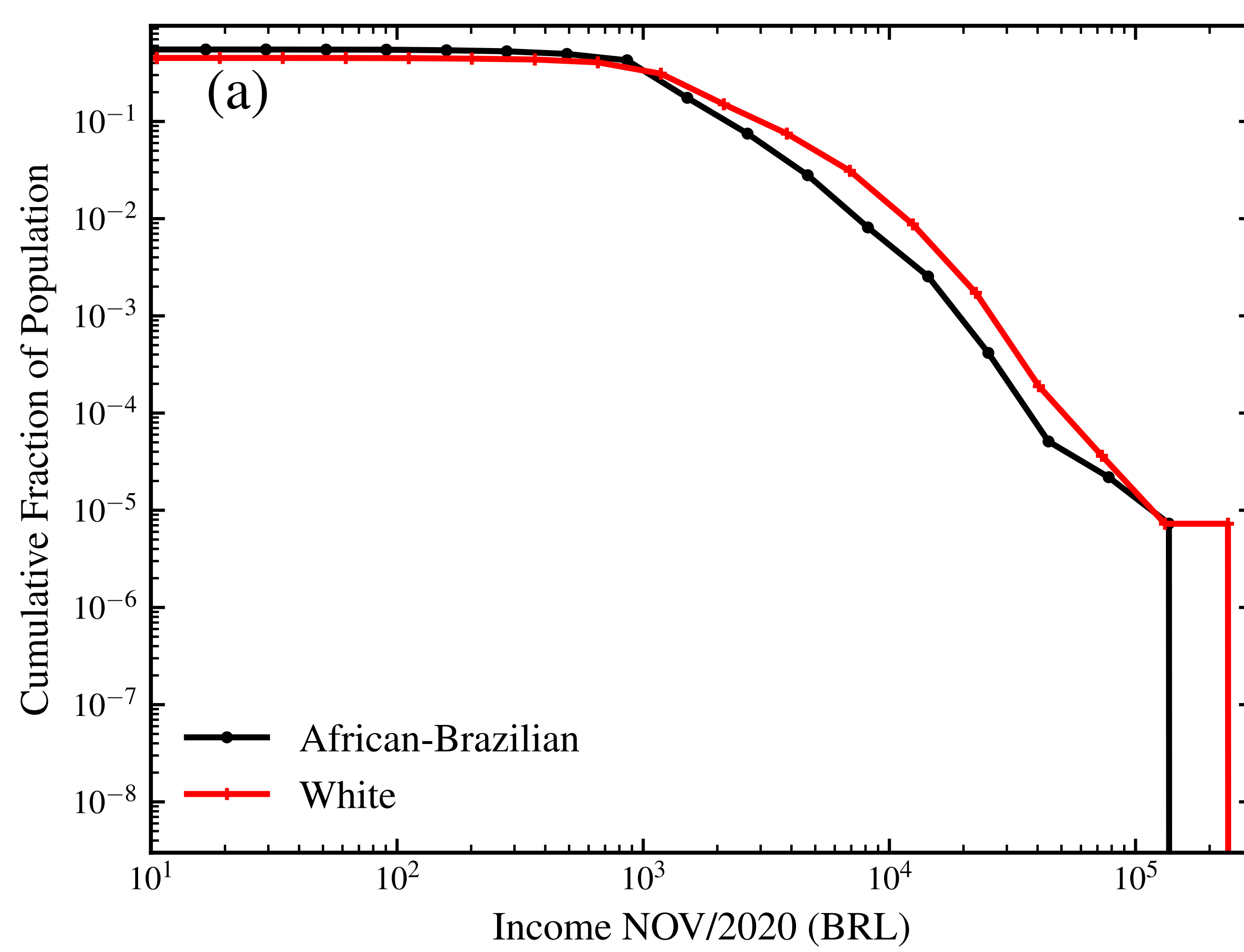
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## Motivation

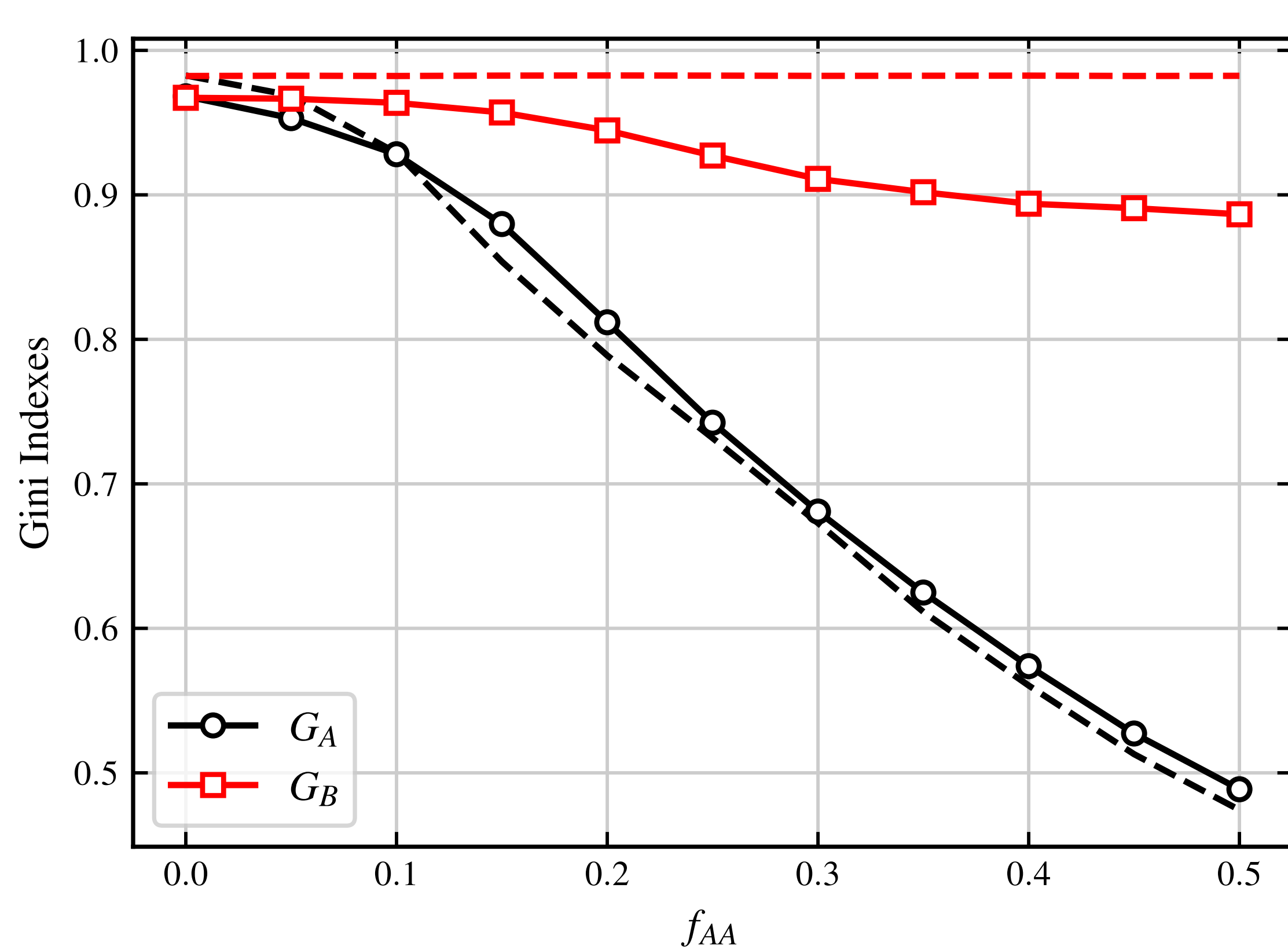
- Social stratification, the division of a society in different groups, is presented in many countries and might reflect in economical inequality of wealth/income
- Race, gender, ethnicity are examples of groups societies can divide themselves
- We study the case of Brazil, where roughly 43% of the population consider themselves white while 56% are African-American (the group formed by black and brown individuals)
- The mean income of a white person is 1.5× larger than the same quantity of black/brown.
- Disparity is even larger when one considers both race and gender.



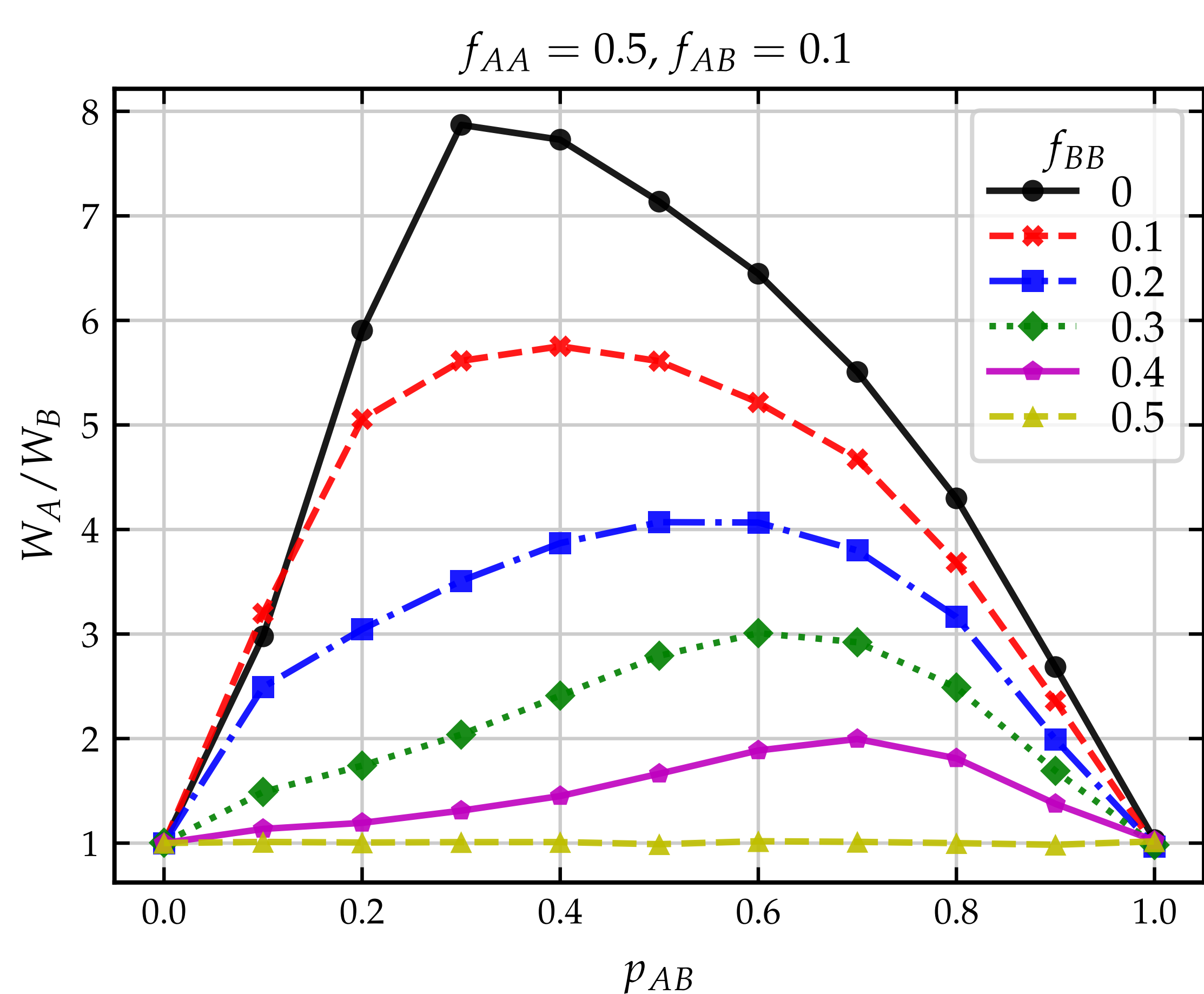
**Figure 1:** Histogram of income population in Brazil by race in November/2020. Data: IBGE



Comparison of the income in NOV/2020 and result of our simulations with  $f_{AB} = f_{BB} = 0.1$  and  $f_{AA} = 0.15$ . Please note the different vertical and horizontal scales.



**Figure 2:** Gini indexes for the groups A and B with  $p_{AB} = 0.5$  and  $f_{BB} = 0.1$  as function of the protection factor for group A. Dashed lines represent Gini indexes without intergroup transactions.



**Figure 3:** Wealth transfer between groups as function of  $p_{AB}$ .

## Model

We have developed an agent-based model, where agents are randomly chosen and can exchange their wealth.

- Agents are characterized by:
  - wealth  $w$ , risk-aversion factor  $\beta$  and group
- Society was divided in two groups, A and B, with  $N_A = N_B = 1000$
- Total wealth is conserved
- $w_i(t) = w_i(t-1) \pm \Delta W$  and  $w_j(t) = w_j(t-1) \mp \Delta W$
- $\Delta w = \min[(1 - \beta_i)w_i, (1 - \beta_j)w_j]$

Each group has its social protection factor,  $f_{AA}$  and  $f_{BB}$  for the groups A and B, respectively, as well as  $f_{AB}$  represents the social factor of trades among individuals of different groups. The probability of favoring the poorer agent is

$$p = 0.5 + f_k \frac{|w_i - w_j|}{w_i + w_j} \quad k = AA, AB, BB$$

The frequency of intergroup transactions was fixed in 0.1.

## Results

## Summary

We have investigated the impact of different social protections in an economy composed by two different social groups. Our results show that, even when the intergroup protection is bigger than the one of the less protected group (B), there is a wealth transfer to the most protected (A).

The Gini index of the group B is positively affected by the protection factor  $f_{AA}$ , and the impact is larger when more  $A \leftrightarrow B$  transactions occur. Group A is not influenced by the changes in  $f_{BB}$ .

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## References

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