Do more flooded countries win more medals in swimming at the Olympics?

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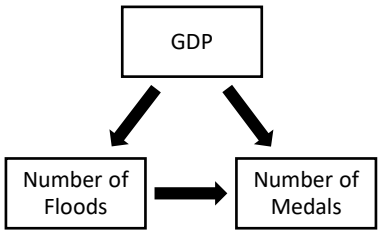
1. Introduction

A country with a high GDP is likely to provide more infrastructures for its inhabitants, for instance swimming pools, but also to protect itself from natural disasters such as floods. In addition, these natural disasters can weaken a country, and direct its spending to priorities other than teaching its population to swim.

Can GDP protect against flooding, and do GDP and flooding have an influence on the number of medals won in swimming at the Olympic Games?



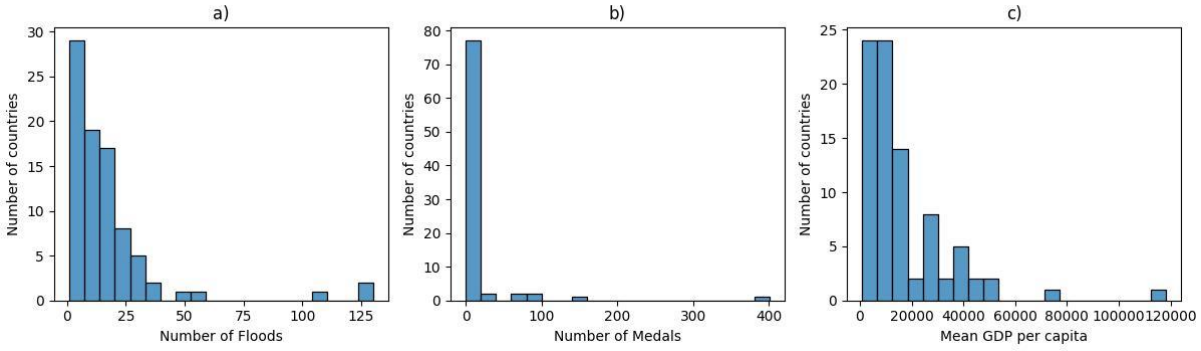
We anticipate that if this is the case, we should observe:

- ***Prediction 1:*** *a lower number of floods in countries with a high GDP.*
- ***Prediction 2:*** *a higher number of medals in swimming in countries with a high GDP and a low number of floods.*

2. Data

Three datasets are used in this analysis: the first one deals with natural disasters, including floods (see Figure 1.a.); the second one on the modern Olympic Games, covering all them from Athens 1896 to Rio 2016, and including medals (see Figure 1.b.); finally, the third one is about life expectancy in 119 countries, from 2000 to 2015, merging different datasets and especially including countries' GDP per capita (see Figure 1.c).

Figure 1



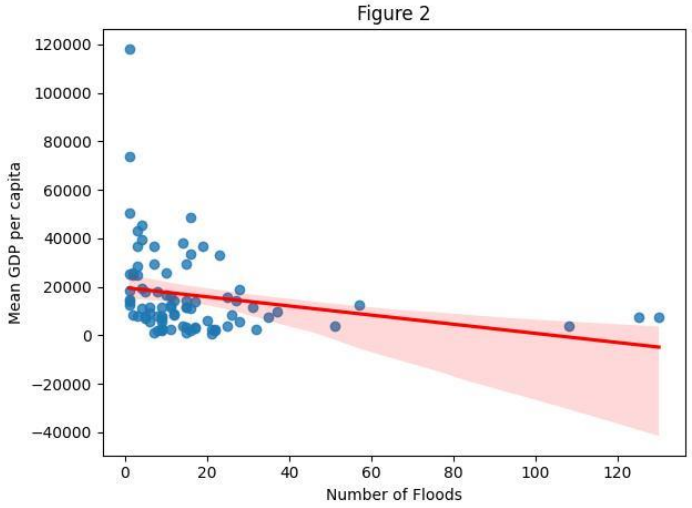
3. Methods

To test prediction 1, we performed a simple linear regression comparing the number of floods depending on the GDP. To test prediction 2, we performed a multivariate linear regression comparing the number of medals depending on the GDP and the number of floods.

4. Results

Countries with a high GDP are slightly less likely to suffer from floods than those with a low GDP (β = -0.0003, see Figure 2.). This is significant, however the model does not explain much of variation of the data (R^2 = 0.058, p = 0.026). Moreover, countries with a higher GDP win slightly more medals in swimming (β = 0.0006). This is also significant, but not explaining much of variation (R^2 = 0.056, p = 0.037). As for the relation between floods and medals it is not significant (p = 0.287).

Figure 2



5. Conclusion

Our results indicate slight, but significant relationships between number of floods and GDP, and between number of medals and GDP. However, we cannot establish a relationship between number of floods and number of medals. It thus seems that **a high GDP increases the number of medals at swimming in the Olympic Games, and reduces the risk of flooding**.

It should be noted that this study is not causal. It could be that an unobserved factor causes the increase of number of floods: for example, being crossed by important rivers, or having a border with a sea or ocean. We also considered the number of floods, and not the number of casualties, nor the cost of the damage. As for the number of medals won, it also depends on the number of times the country participates in the Olympic Games.