

EDx - MINI PROJECT

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Dataset Selection:

In this project I will be using the **World Development Indicators** dataset.

This dataset was previously used in this course and it was obtained from the **World Bank**. It contains more than a thousand annual indicators of economic development from hundreds of countries around the world.

Motivation

The problem that I would like to solve with this dataset is finding why Italy is experiencing one of the lowest fertility rates on the planet. Italy is a beautiful developed country, with resources, a good economy, history and culture, but its society is ageing.

The data contained in our dataset will help me to understand if having less kids is a global trend or not. But **even if this was the case, why is Italy performing so badly?**

This is a particularly strange trend for this country because Italian people have a **family culture**, they tend to spend a lot of time with their relatives and **live together in the same area**. Therefore, we would expect a high fertility rate for this country, thanks to family unity and support. It is a really interesting phenomenon and we will explore the dataset to find an answer to our question.

We will explore socio-economical factors, visually compare trends, look for statistical correlations, and create interactive maps to have a representation of this trend and to understand how the planet is changing on a global scale.

Research Question(s)

My research question is:

What is causing a decrease in fertility rate in Italy?

Is this trend due to economical factors such a higher unemployment rate or a lower GDP growth? After all, it makes sense that a loss of economical power could be correlated to the decision of not having children or having less children.

Or, is it due to the entry of women into extra-domestic labour force, a global trend that could have an impact on this decision?

We will need to check the relationship between these indicators to find an answer to these questions.

Findings

This research has allowed us to understand that **a decrease in fertility rate** is a global phenomenon: by comparing the **Italian and the world fertility rates**, we managed to understand how poorly Italy is performing in recent times.

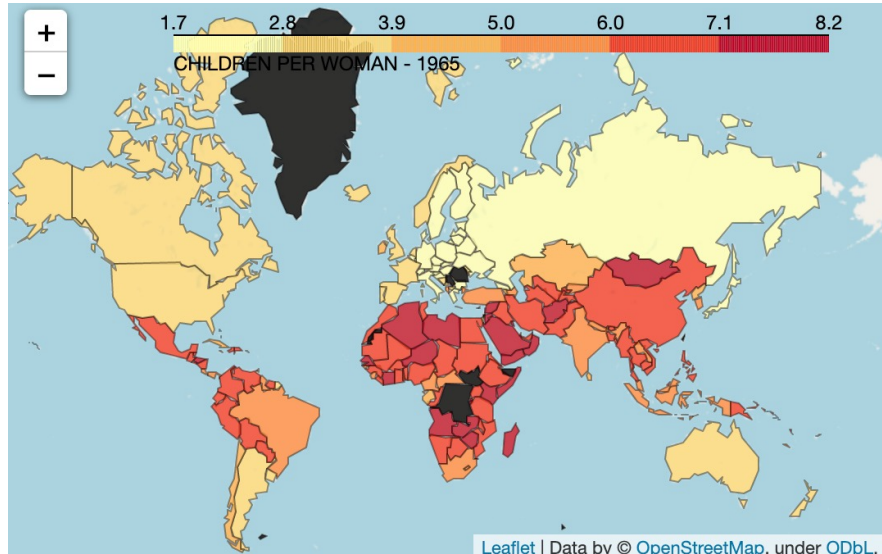
The data stored in our dataset starts in 1960 and ends in 2005: we could see that Europe has always been one of the areas with the lowest fertility rate and that other countries, such as China, Australia, North and South America, North and South Africa have showed a consistent decline in birth rates. In this scenario, Italy, with one of the lowest rates, has underperformed in Europe. We explored different indicators and found out that:

1. Both the Italian unemployment rate, which has seen ups and downs in time, and the constant increase in female participation in the labour force **are not correlated to the fertility rate (poor coefficients of 0.27 and 0.24 respectively)**.
2. The GDP constantly declined from 10% to -2% in Italy, This indicator had a poor correlation with the fertility rate (0.52) but I decided to further investigate it because I considered it a too generalised indicator to assess the finance of Italian families. Then, we analysed the **Italian gross savings**, which is constantly decreasing, and found **a correlation of app. 0.70 with the fertility rate**. This indicates that the **correlation is not perfect, but it is strong enough to be acknowledged and researched further**.

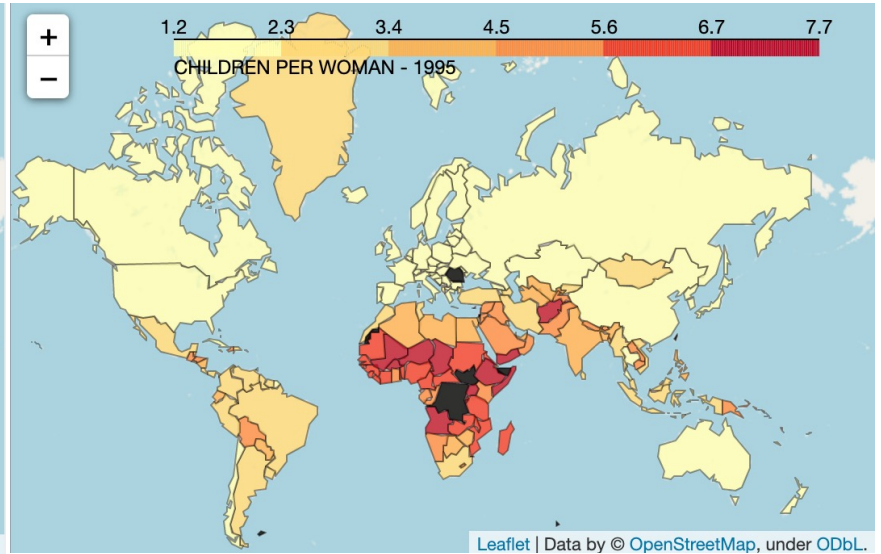
The Italian inability to saving money can be due to many factors: increased cost of living, decreased salary, precarious contracts, etc.. This sense of financial instability can potentially force women to postpone their decision of having a child, at least until they have achieved a better financial situation. I believe that this can be a reasonable conclusion at this stage of investigation and that we will have to further investigate this matter to get a better understanding of it.

Italy present great regional differences, and it would be interesting to outsource a more detailed dataset to investigate this trend in different regions. We could test factors such as: the Italian labor market flexibility, employment contract quality, public childcare quality and divorce rates. Basically, the next step will be going beyond aggregate country comparisons and research more carefully changing fertility behaviour within Italy.

As we can see, the fertility rate has dramatically shifted from 1965 to 1995. By visually comparing these two images, it is easy to get a grasp of the global trend. We can notice that Europe has experienced an overall low rate, while other countries have seen a significant shift in fertility rate (China, Australia, south and north America as well as south and north Africa). The back colour indicates absence of data in our dataset.



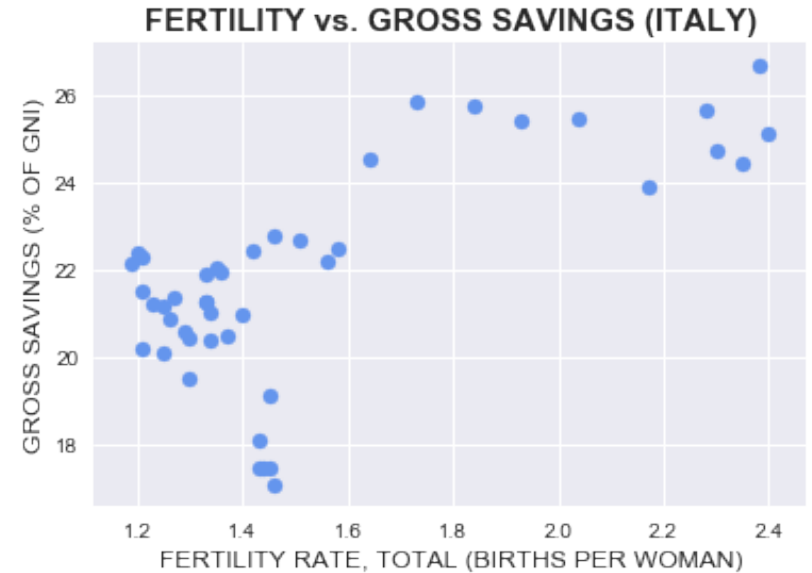
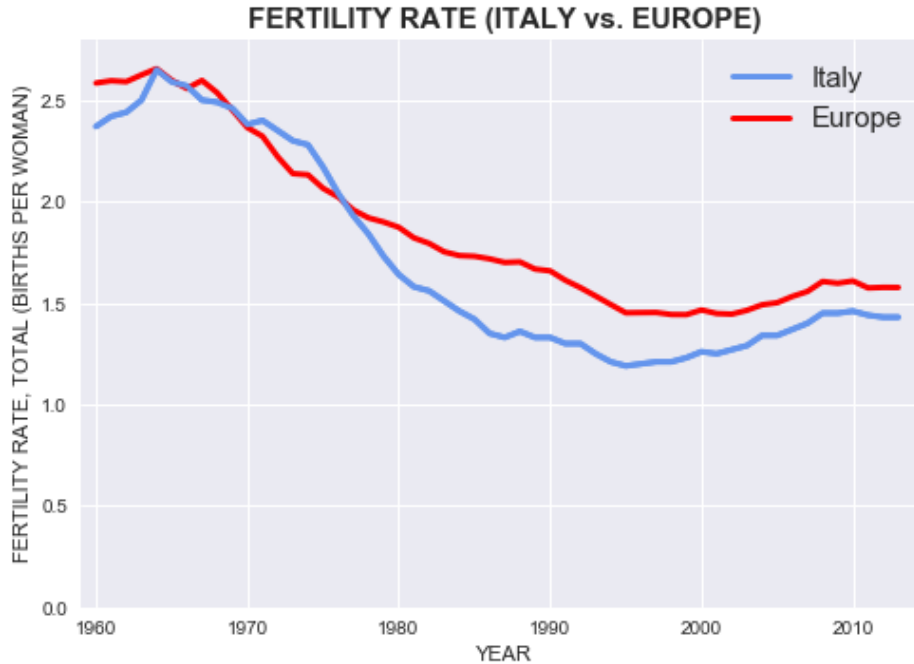
Fertility Rate, Worldwide, 1965



Fertility Rate, Worldwide, 1995

The diagram on the left shows that Italy is underperforming in Europe.

The diagram on the right, shows the correlation between the fertility rate and the gross savings in Italy.



Gross Savings - Fertility correlation = 0.69

Acknowledgements

For my research I did not use other informal analysis to inform my work. I received some feedback from my partner who found my findings very interesting and particularly enjoyed the interactive maps that I created using the folium library. She enjoyed my presentation and suggested further investigation as this is a very interesting topic.

References

I did all the work on my own and did not use any research paper to guide my analysis.