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Effect of Literacy on Fertility

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Abstract

The main aim of this study is to estimate the relationship between fertility and literacy of women in the world. Using time series data on the total fertility rate (births per woman), and the literacy rate of adult females (% of females ages 15 and above) over 20 years has been taken from the World bank. "Studies have recently shown a strong correlation between an increase in literacy levels and a decrease in fertility rates" (Robey). "According to researchers, the increased literacy rate supports population stabilization" (Google chrome, n.d.). This report highlights the potential impact of these variables in shaping population dynamics, and the need for continued investment in literacy programs to achieve a more sustainable future.

Keywords: Literacy, Fertility

Introduction

Education and literacy play a critical role in gender equality, women empowerment, promoting reproductive health, and family planning around the world. According to the given data, we can see a slow and gradual decrease in the fertility rate, whereas the literacy rate has consistently increased from the year 2000 to 2020. "Women with higher literacy levels are more likely to have more children who survive due to their increased knowledge of proper health practices and their generally improved living conditions" (Robey). Literate people desire to have fewer kids as they can understand the expensive childcare and increased financial burden of having a larger family size. Even educated people are concerned about the rapidly increasing population so they usually plan for fewer kids. However, I have used a simple linear regression model, "it is important to understand that there could be other factors as well that may affect the fertility rate such as environment, lifestyle, fecundity, genetic factors, etc." (Aitken, (2022))

Data

The World Bank data given in the below table represents the total fertility rate (births per woman) and the literacy rate of adult females (% of females ages 15 and above) of the World over the past 20 years.

Variables

1. Fertility rate, total (births per woman)

"The total fertility rate indicates the average number of children a woman would have if she lived through her entire childbearing years and had children based on the fertility rates of a particular year, by age" (google chrome, n.d.).

2. Literacy rate, adult females (% of females ages 15 and above)

"The adult literacy rate is the proportion of individuals aged 15 and above who possess the ability to read and write and comprehend a straightforward statement regarding daily life" (google chrome, n.d.).

Data is given in the below table:

Year	Literacy Rate	Fertility Rate
2000	75.60108185	1.000063812
2001	76.03243256	0.986059038
2002	76.43810272	0.975953471
2003	77.0109787	0.966981413
2004	77.48210144	0.963695525
2005	77.3783493	0.956718225
2006	77.95818329	0.953666463
2007	78.28804779	0.953288442
2008	78.78829956	0.953027727
2009	79.20346069	0.947682205
2010	79.93067169	0.93787984
2011	80.29656982	0.929820164
2012	80.74411774	0.935948271
2013	80.97041321	0.921960972
2014	81.51850128	0.918915938
2015	81.78827667	0.907403636

2016	82.33257294	0.908703074
2017	82.66536713	0.899819223
2018	82.80374146	0.874343161
2019	83.24687958	0.858897326
2020	83.45913696	0.832487272

The chart below represents a consistent global literacy rate increase over time.
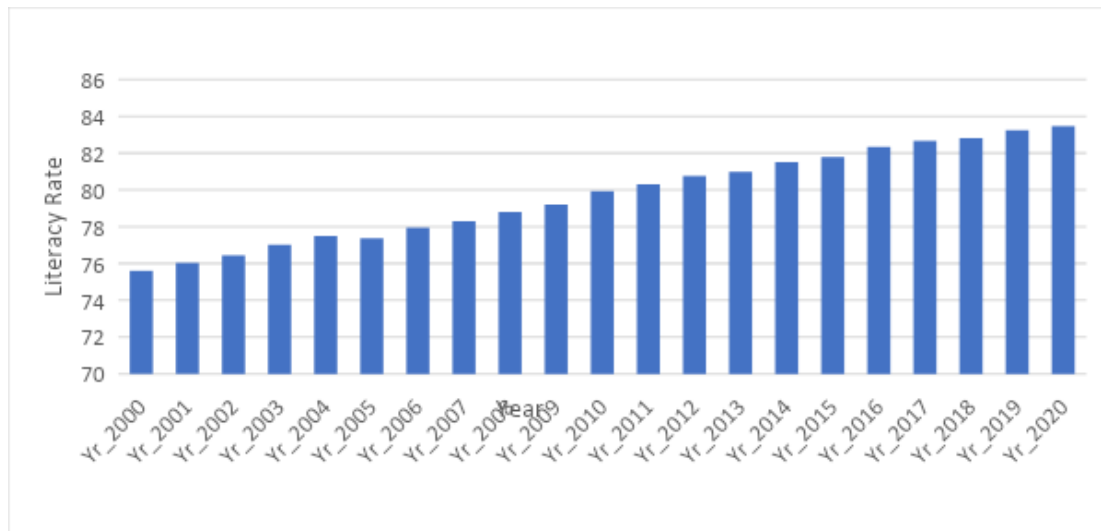
The below chart represents a decline in the world's fertility rate over time.
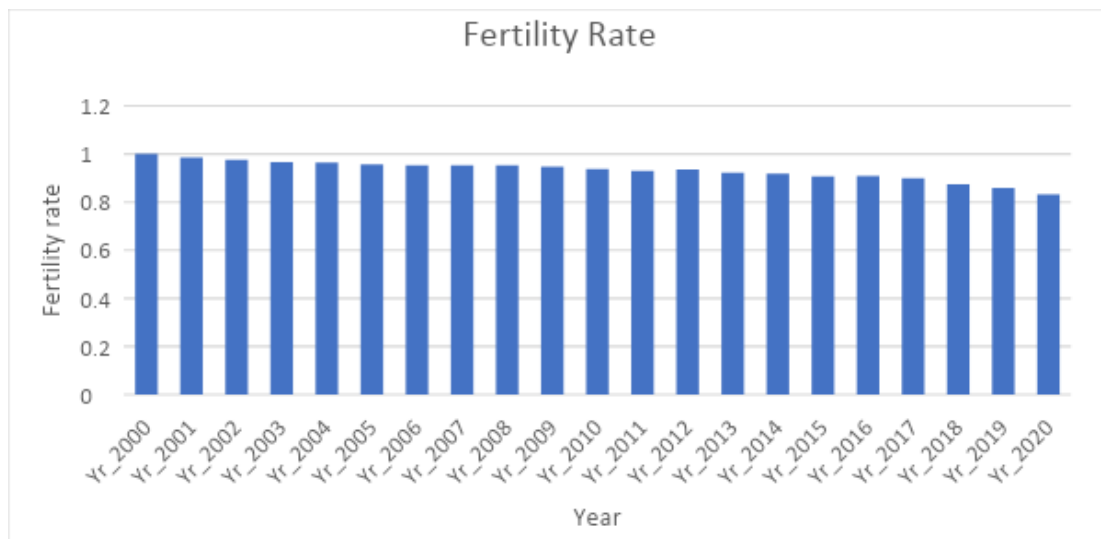
Methodology

"The research carried out is descriptive in nature, aimed at improving the understanding of the conducted analysis of a simple linear regression model with a regressor and a regressand" (Reddy, (2012)).

According to the information in the given tables, I have used a bivariate regression test to forecast the relationship between literacy and fertility in the world. After using econometric testing in a regression analysis, the hypothesis is considered to check the significance of the regression coefficient.

Null hypothesis (H0) = both have no relation

Alternative hypothesis (H1) = both have either a positive or negative relation

Results

Slope coefficient	t Stat	P-value	R Square
-0.015622564	-12.27216458	0.000000000177	0.887975677

As the p-value is less than 0.05 we can say that the coefficient is statistically significant so we will reject the null and accept the alternative hypothesis.

The negative sign of the slope coefficient describes that there is a negative relationship between the variables.

The R- square of this model is 88% which explains the variation in fertility rate i.e., explained by literacy rate.

Interpretation of the model:

When the world's literacy rate increases by 1%, the fertility rate decreases by 0.0156%.

Conclusion

The results of this econometric regression analysis clearly demonstrate that the literacy rate strongly affects fertility. These findings clearly support the well-established notion that "higher levels of literacy are associated with lower fertility rates" (Google chrome, n.d.). However, it is important to note that while literacy is a strong predictor of fertility, it is not the only factor that determines fertility patterns. Several other reasons may affect the fertility rate, such as family planning policies, lifestyle, economic, social, genetic, and environmental factors, etc. The high R-square value highlights the importance of the literacy rate in determining the fertility rate and emphasis the need for continued efforts to improve the education level, particularly in regions with high fertility rates for overall economic development.

References

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