Analysing Trends in Life Expectancy, Gender Pay Gap, and Population Across Six European Countries (2020-2022)

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Abstract*— This study looks at six European countries (France, Croatia, Italy, Cyprus, Latvia, and Lithuania) from 2020 to 2022 in terms of important demographic and socioeconomic indicators, including life expectancy for men and women, gender wage discrepancy, and population distribution by gender. These measures provide insights into the dynamics of population composition, wealth equality, and public health across many locations, particularly in the face of global issues such as the COVID-19 pandemic. The results offer a comparative perspective of these countries, pointing out trends, patterns, and inequalities that have [i]significance for future studies and the formulation of policies meant to improve public health resilience and socioeconomic equality.

Keywords: Gender analysis, data visualization, European countries, population distribution, life expectancy, gender pay gap

I. INTRODUCTION

The OECD[ii] and Eurostat databases, which are openly accessible, provided the data for this analysis, guaranteeing its timeliness and correctness. To provide a balanced representation of Western and Eastern European regions, six countries were chosen, offering a range of perspectives on socioeconomic and demographic circumstances. The gender wage gap, the distribution of the population by gender, and life expectancy at birth are the main factors that are looked at. To capture both cross-country and temporal trends, data points from 2020, 2021, and 2022 were extracted and displayed using a variety of chart types. These graphs, which show trends and variances in reactions to the worldwide COVID-19 pandemic, offer an organized foundation for investigation. To make patterns and insights easier to understand and compare, techniques like combination charts, bar charts, and line charts were used.

II. DESCRIPTION OF DATASET

A Life Expectancy Trends (2020-2022)

The gender-specific life expectancy study illustrates how the COVID-19 epidemic has affected public health in various nations. Line charts (Fig. 1 & Fig. 2) are perfect for tracking life expectancy from 2020 to 2022 since they clearly show changes over time.[iii]

Males: Latvia and Lithuania have typical life expectancies of 69–71 years, while France and Italy have unusually high life expectancies (around 80 years), suggesting possible socioeconomic or public health inequalities. The impact of the pandemic is probably reflected in the minor dip that occurs in 2021, which is followed by a recovery in 2022.

B. Tools for Visualisation

Microsoft Excel was used to make the charts. Bar charts, pie charts, and other appropriate graph styles are used in the visualisations to accurately depict the gender distribution. The charts were formatted and styled for easy reading using Excel's tools.[iv]

III. GRAPHICS

A. Life Expectancy Trends (2020-2022)

Because it clearly illustrates changes over time, the line chart is the best option for life expectancy trends. The charts' distinct focus on men and women makes comparisons simple and emphasizes the gender gap in life expectancy, which shows that women routinely outlive men. This discrepancy is particularly noticeable

in Latvia and Lithuania, where lower statistics for both sexes suggest possible issues with access or quality of treatment.

Men
Male life expectancy in France, Croatia, Italy, Cyprus, Latvia, and Lithuania is contrasted in the line graph (Fig. 1). Latvia and Lithuania have shorter life expectancies (approximately 69–71 years), while France and Italy have higher averages (around 80 years). The effects of the pandemic cause a discernible decline in 2021, which is followed by a recovery in 2022.

Women
In all six countries, women live longer than males, according to the female life expectancy chart (Fig. 2), with France and Italy once again having the greatest life expectancy (84–85 years). Like males, there is a decline in 2021 and a subsequent increase in 2022, suggesting post-pandemic recovery.

B. Distribution of the Population by Gender

Bar charts were chosen to examine the gender distribution in 2021 because of their ability to clearly display comparison figures. To illustrate regional demographic structures, population data was divided between smaller countries (Cyprus, Latvia, and Lithuania) and larger countries (France and Italy).

Italy, France, and Croatia: In larger nations, a slight gender gap indicates a higher proportion of women, which is consistent with longer life expectancies for women. This tendency is like demographic trends in Europe, where women usually make up a slightly larger share of the population because of variations in longevity.

Cyprus, Latvia, and Lithuania: The bar chart also shows a higher proportion of women in these smaller nations. With greater male death rates, Latvia and Lithuania exhibit a more pronounced gender imbalance, which may be due to cultural factors influencing male longevity as well as healthcare inequalities. (Fig.3)

C. Pay Gap by Gender (2020–2022)

The gender pay gap is depicted in a clustered column chart that shows the extent of income disparity over a three-year period as well as its temporal variations. According to the statistics, Croatia and Italy have lower salary discrepancies (5-7%), whereas Latvia has a persistently high one (about 22% in 2020, dropping slightly to 18% by 2022). Disparities that can be a result of different cultural, economic, and policy factors influencing income equality are highlighted in this image. (Fig.4)

D. Distribution of the Population

Since France and Italy are the most populous of the chosen nations, a bar chart was made to compare the male and female populations in these two countries especially. To highlight the larger female population in both nations, the pink bars stand for females and the blue bars for males. This color-coded display highlights gender disparities in population structure and enables rapid demographic comparisons.
(Fig.5)

E. The Association Between the Gender Pay Gap and Life Expectancy

Intriguing correlations between life expectancy and the gender wage difference in each of the six nations are highlighted in a combo figure. With longer life expectancies, nations like France and Italy exhibit comparatively reduced gender pay gaps, which may indicate a connection between socioeconomic equality and public health outcomes. On the other hand, Latvia's huge wage disparity and shorter life expectancy raise the possibility that social inequality and worse public health metrics are related. This result highlights the intricate relationship between quality of life and economic fairness, which calls for more research. (Fig.6)

F. Distribution of the Population by Gender in France and Italy (2021)

To compare the numbers of men and women in France and Italy in 2021, a bar chart was made. The male population is represented by the blue bars in this graphic, and the female population is represented by the pink bars. Women outweigh men in both nations, as the graph shows, with France having a larger gender gap than Italy. This graphic depiction gives context for demographic shifts over time and draws attention to significant gender disparities in these two significant European nations.[v] (Fig.7)

TABLE I

Data Set Characteristics	Number of folders	Number of files	Data Collection	Size	Number Of Attributes	Number of Instances	File Formats	Data Type
	1	1	Eurostat	102KB	9	54	CSV	Structured

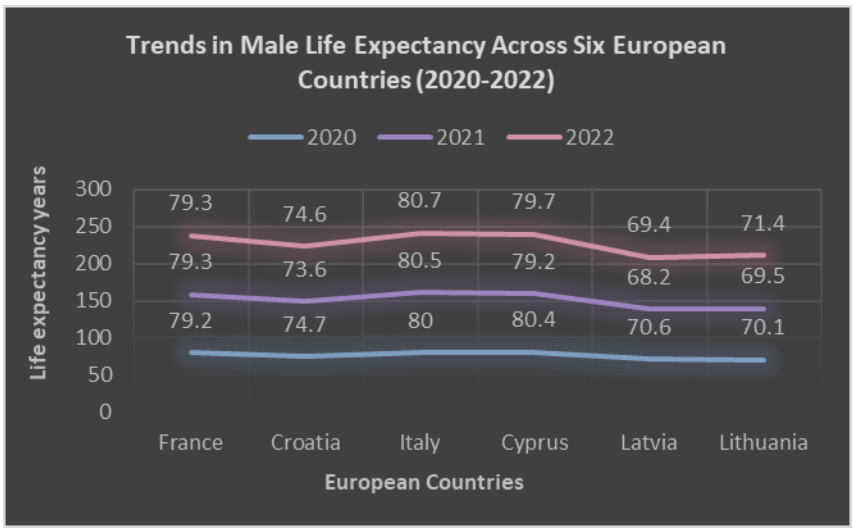

Fig. 1 Line chart for Male Life Expectancy (2020-2022)

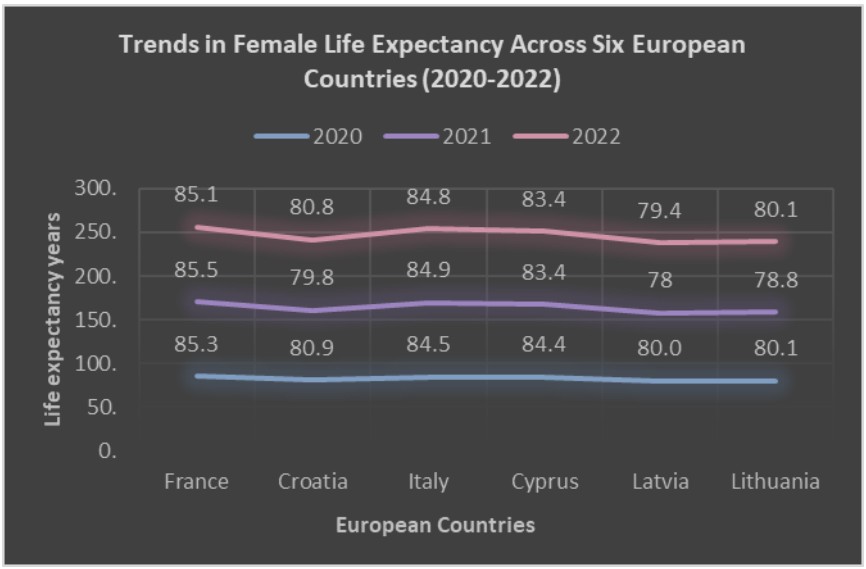

Fig. 2 Line chart for Female Life Expectancy (2020-2022

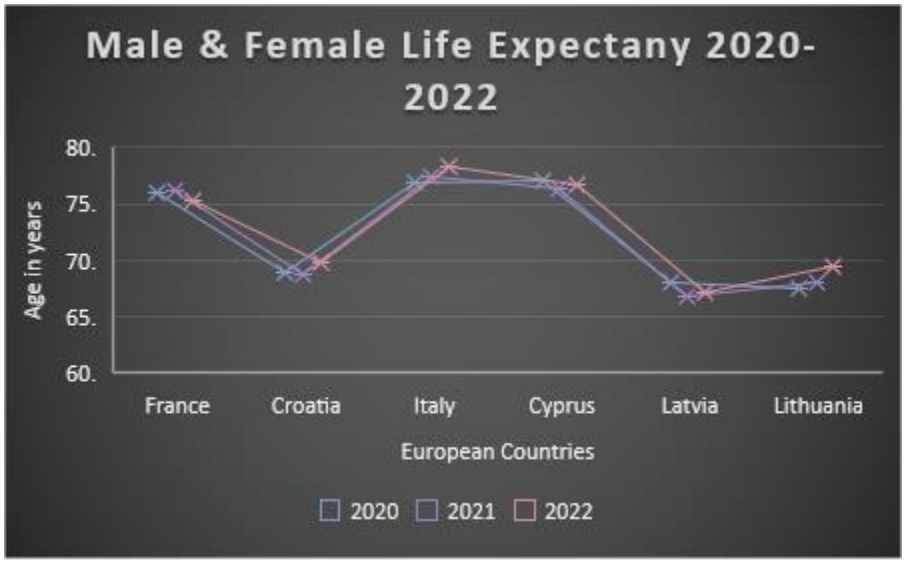

Fig. 3 Box and Whisker Plot for Life Expectancy

Fig. 4 Gender Pay Gap (2020-2022)

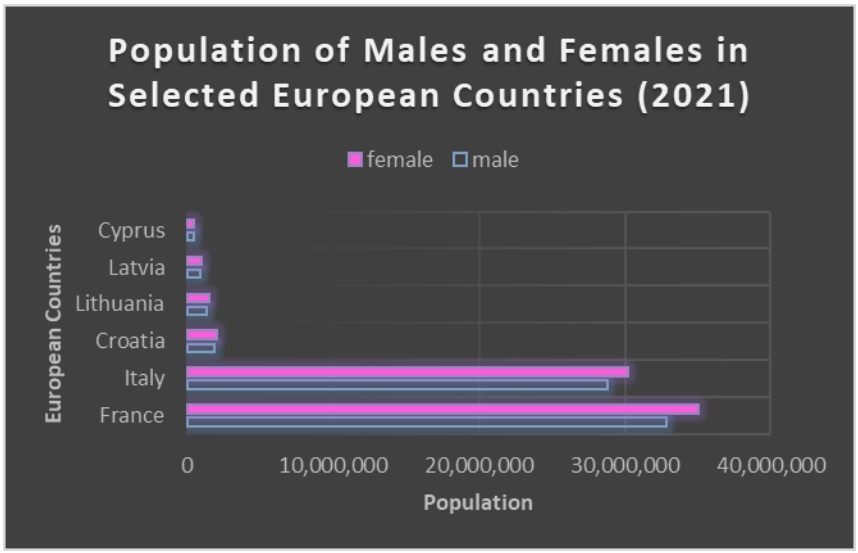

Fig. 5 Clustered Bar Chart for Population by Gender in 2021.

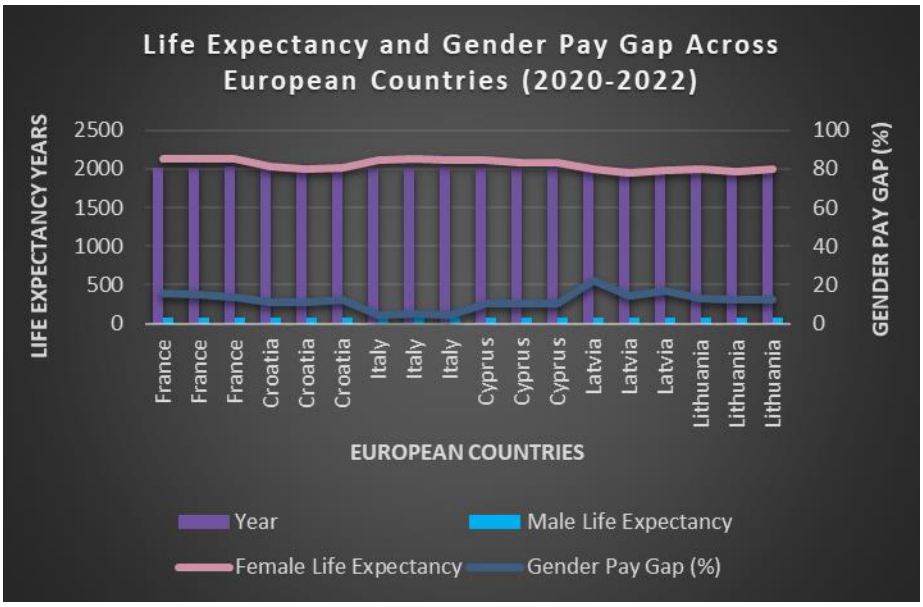

Fig. 6 Combination Chart for Life Expectancy and Gender Pay Gap (2020-2022)

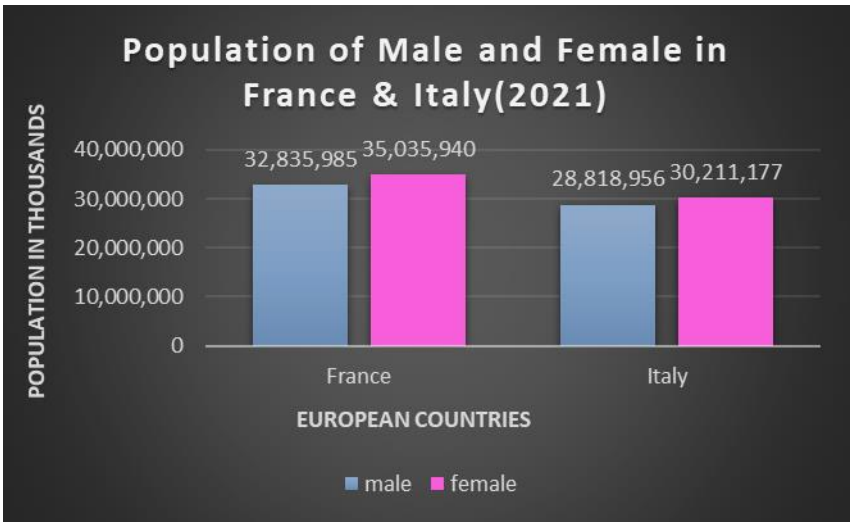

Fig. 7 Population of Male & Female in France/Italy (2021)

IV. CONCLUSIONS

This study compares the demographic distribution, gender wage disparity, and life expectancy of six European countries between 2020 and 2022. The graphics highlight important differences, especially between Eastern and Western European nations. Higher life expectancies and smaller gender pay discrepancies are observed in France and Italy, which may be a result of their more robust public health systems and social safety nets. On the other hand, the lower life expectancies and wider salary disparities in Latvia and Lithuania suggest that there are more serious socioeconomic issues at play. These results raise the possibility that public health and economic equality are related; nations with more equitable income distributions typically have better health outcomes, underscoring the possible advantages of programs that try to lessen inequality. Regarding policy implications, these findings highlight the significance of continuous changes to reduce income and health inequities, particularly in Eastern European nations. For example, by promoting social cohesiveness and improving access to health care, closing large pay discrepancies may increase life expectancy overall. Addressing gender-based wage gaps and enhancing health systems can be effective measures for attaining sustained societal well-being while Europe struggles with demographic shifts and economic issues.

V. Acknowledgement

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References

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