Introduction

Suicide represents a pressing public health issue influenced by a multifaceted interplay of socioeconomic determinants. Gaining insight into the intricate relationship between these factors and suicide rates is imperative for devising efficacious prevention measures. Socioeconomic factors significantly contribute to the elucidation of suicide rates, as evidenced by research indicating correlations between suicide and variables such as at-risk-of-poverty rates, annual growth rates within industries, and healthcare expenditures. Notably, unemployment emerges as a prominent risk factor for suicide, whereas the influence of education and income levels manifests with varying consistency in scholarly discourse.

Data Used

The analysis utilized datasets sourced from Kaggle, a reputable platform for datasets. These datasets contained comprehensive information on suicide rates spanning the years 1992 to 2022, including demographic variables such as age, gender, and generation. Additionally, socio-economic indicators and country-wise data were incorporated to provide a holistic understanding of the factors influencing suicide rates.

Data Analysis Techniques:

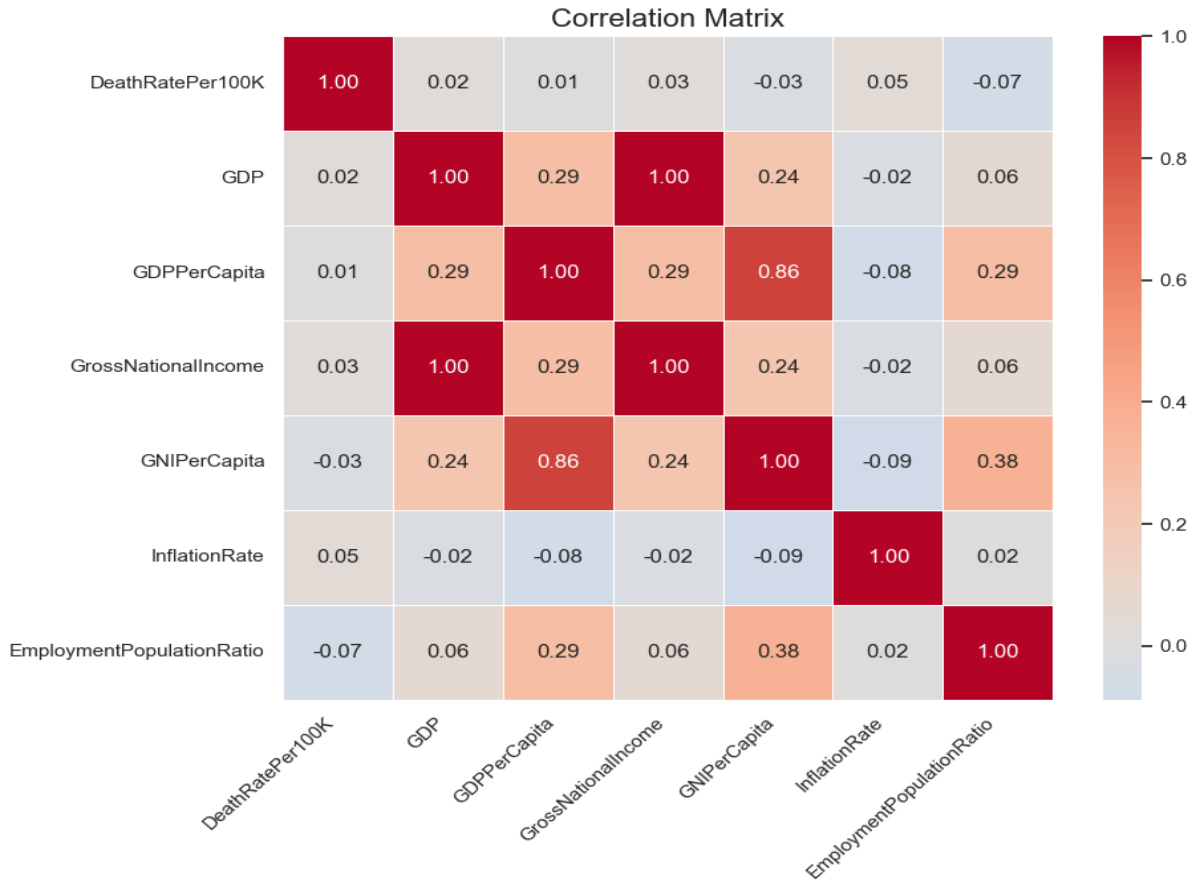
1. **Descriptive Statistics:** Basic descriptive statistics such as mean, median, and standard deviation were calculated to understand the central tendency and variability of suicide counts and rates over the years.

2. **Time-Series Analysis:** Time-series analysis techniques were applied to identify trends and seasonal patterns in suicide rates over the study period. This involved visualizing the data using line plots and decomposition methods to separate the trend, seasonal, and residual components.

3. **Grouping and Aggregation:** The data was grouped and aggregated by demographic factors such as age group and generation to analyze variations in suicide rates across different population segments. Bar plots and heatmaps were used to visualize the aggregated data and identify patterns.

4. **Correlation Analysis:** Correlation analysis was conducted to explore the relationships between suicide rates and socio-economic indicators such as GDP, GDP per capita, and inflation rate. This helped identify potential factors associated with changes in suicide rates over time.

Economic Influence and Correlation



The majority of correlation coefficients observed fall within a narrow range, typically between -0.06 and 0.06. Correlations below -0.3 or above 0.3 are generally considered indicative of weak or negligible relationships.

- The most notable negative correlation observed is approximately -0.06 for the Employment Population Ratio, suggesting a minimal inverse association between higher employment rates and lower instances of suicide.

- Conversely, the most prominent positive correlation, approximately 0.06, is noted for the Inflation Rate, indicating a slight positive relationship between higher inflation levels and increased suicide occurrences.

- Other economic indicators such as GDP, GDP Per Capita, GNI Per Capita, and Gross National Income exhibit even weaker correlations, with coefficients hovering around zero.

- In summary, while the directional trends of these correlations align with anticipated relationships (e.g., higher income potentially linked to reduced suicide rates), the actual strengths of these correlations with suicide numbers are extremely weak or negligible based on the provided data visualization.

- No strong positive or negative correlations between the listed economic factors and suicide rates appear evident.

Insights

Total Suicide Trends

- *From 1990 onwards, there was a discernible upward trend in the total number of suicides, culminating in a peak of approximately 260,762 suicides recorded globally in 2002.*
- *Subsequently, there was a consistent decline observed in global suicide rates. This downward trend continued steadily, reaching its lowest point in 2022, with approximately 119,655 suicides documented.*
- *The trend line depicting these changes illustrates a significant decrease in global suicide rates over the past two decades, signifying a positive shift in this critical public health indicator.*

Suicides per 100K Population Trend

The pattern of suicides per 100,000 population mirrors that of the total number of suicides, indicating a parallel trend:

- *The peak occurred in 2001, with approximately 48,428.25 suicides per 100,000 populations.*
- *Following this peak, a consistent decline ensued, with the rate steadily decreasing over subsequent years. By 2022, the rate had reached its lowest point, with approximately 19,871.20 suicides per 100,000 populations.*
- *This sustained decrease in suicides per 100,000 populations suggests that efforts in suicide prevention and mental health initiatives may have been effective on a global scale, contributing to the reduction of relative suicide rates.*

Age Distribution

- *The age group between 35 and 54 years exhibits the highest number of suicides, accounting for 2.72 million cases.*
- *Correspondingly, the suicide rate per 100,000 population is most pronounced within the 35-54 age bracket, followed by the 55-74 age group*
- *Conversely, age groups below 35 years and those above 74 years present relatively lower suicide rates.*

Gender Factor

Gender disparities in suicide rates reveal a pronounced contrast, with males comprising a significantly higher proportion of cases compared to females. Specifically:

- *Male suicides total 5.8 million cases, whereas female suicides amount to 1.71 million cases, indicating a substantial numerical imbalance.*

- *The suicide rate per 100,000 population underscores the heightened vulnerability of males, with a rate of 19.56 compared to 5.04 for females. This substantial disparity in rates accentuates a considerably greater risk for men in terms of suicide.*

Economic Factors

- *The Employment Population Ratio displays the most notable negative correlation (-0.06), implying that higher employment rates might coincide with lower suicide rates.*
- *Conversely, the Inflation Rate exhibits the strongest positive correlation (0.06), hinting at a potential association between higher inflation levels and increased suicide rates.*

- *Factors such as GDP, GDP Per Capita, and GNI Per Capita demonstrate minimal negative correlations, suggesting a tentative link between higher income levels and lower suicide rates. However, these relationships are notably weak.*

Generational Differences

- *While Boomers and the Silent generation exhibit higher suicide rates in absolute numbers, a shift in perspective reveals distinct insights. Specifically, the Silent generation stands out, emphasizing the necessity for a targeted approach within this demographic to address their elevated suicide rates effectively.*

- *Contrasting this trend, Generation Z displays notably lower suicide rates per 100,000 population. This discrepancy suggests the presence of potentially distinct factors influencing the mental health and well-being of the younger population, necessitating tailored interventions to support their unique needs.*

Conclusion

- *The data and visualizations offer a holistic depiction of suicide trends, demographic nuances, and potential correlations with economic variables. The declining trajectory in total suicides and suicides per 100,000 population over the past two decades presents an encouraging indication, suggesting the efficacy of suicide prevention endeavors and mental health initiatives in alleviating the global burden of suicide.*

- *However, these insights also underscore the necessity for a nuanced and targeted approach, recognizing the significant impact of demographic factors such as gender, age, and generational disparities on suicide risk. The stark gender disproportion, with males experiencing a markedly higher prevalence of suicide, accentuates the imperative for tailored interventions and support mechanisms for this vulnerable demographic.*

- *Moreover, the distribution of suicides across age groups, notably the elevated rates observed within the 35-54 age cohort, and the heightened risk among the Silent generation when considering rates per 100,000 population, underscore the urgency for specialized strategies and resource allocation.*

- *While economic indicators like employment, inflation, and income levels demonstrate some associations with suicide rates, their influence appears comparatively modest when juxtaposed with demographic variables. Nevertheless, addressing economic instability and ensuring equitable access to mental health services, particularly within socioeconomically disadvantaged communities, could augment broader suicide prevention endeavors.*

- *Looking ahead, a comprehensive approach integrating mental health education, destigmatization efforts, early intervention strategies, and accessible support services tailored to specific demographic and socioeconomic contexts is paramount. Continued research endeavors and evidence-based interventions are indispensable for deepening our understanding of the multifaceted determinants of suicide rates and formulating effective prevention measures.*

- *Ultimately, the overarching objective should be to foster a societal ethos that prioritizes mental well-being, fosters open dialogue, and empowers individuals to seek assistance without fear of judgment or stigma, thereby safeguarding against the tragic loss of lives to suicide.*

The End..