Suicide Rates – In-Depth Analytical Report

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1. Executive Summary

This report presents an in-depth analysis of global suicide rates based on a dataset containing demographic, economic, and geographic variables. The analysis aims to uncover patterns and trends over time, identify vulnerable groups, and suggest data-driven recommendations for mental health policy and prevention efforts.

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2. Dataset Overview

- **Source File**: `master.csv`
- **Total Records**: ~27,000+ entries
- **Time Span**: 1985 to 2016
- **Countries Covered**: Over 100
- **Key Features**:
    - Country, Year
    - Gender, Age Group
    - Number of Suicides, Population

- Suicide Rate per 100k population
- GDP per Capita, Generation

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3. Data Cleaning & Preprocessing

- Renamed columns for readability (e.g., `suicides_no` → `SuicidesNo`, `gdp_per_capita ($)` → `GdpPerCapita`).
- Dropped irrelevant or incomplete columns such as `HDIForYear` and `CountryYear`.
- Verified data types and handled missing values.

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4. Exploratory Data Analysis (EDA)

📈 Trends Over the Years

- Suicide rates show notable fluctuations across years with a general decline in many developed nations in recent years.
- Some countries still exhibit rising trends, indicating localized crises.

👫 Gender-Based Insights

- Suicide rates are consistently higher among **males** than females across all countries and age groups.
- On average, male suicide rates are **2 to 4 times higher** than female rates.

👶👨‍🦳 Age Group Analysis

- The most vulnerable age groups:

    - 45–54 years
    - 75+ years
- Younger groups (15–24) have lower suicide numbers but recent increases in specific regions.

🌍 Country-Wise Suicide Rates

- Countries like **Lithuania, Russia, and South Korea** report some of the highest suicide rates.
- Countries with high GDP don't always correlate with low suicide rates, suggesting mental health policy is a critical factor.

💰 Economic Correlation

- Moderate **negative correlation** observed between `GdpPerCapita` and suicide rate in some regions.
- Economic stability **alone** does not guarantee lower suicide rates.

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5. Visualizations Summary *(Based on the notebook)*

- **Heatmaps**: Correlation between variables.
- **Bar Charts**: Country-wise comparisons.
- **Line Charts**: Year-over-year trend by gender and age.
- **Box Plots**: Distribution of suicide rates across generations and age groups.

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6. Key Insights

- **Males**, especially those in **middle and old age**, are at the highest risk.
- **Generational shifts**: Baby Boomers and Generation X show higher suicide counts compared to Millennials.
- Economic growth **does not directly reduce** suicide rates — cultural, psychological, and healthcare factors are influential.
- Some **developing nations** exhibit underreporting or inconsistent data, indicating gaps in data infrastructure.

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7. Recommendations

1. **Policy Focus**: Implement and fund mental health programs targeted at middle-aged and older males.
2. **Youth Outreach**: Invest in school and university-based awareness programs to curb rising trends in youth suicides.
3. **Data Reporting Improvements**: Encourage countries to adopt standardized, accurate suicide data reporting methods.
4. **Cross-Disciplinary Research**: Collaborate with sociologists and psychologists to understand the underlying non-economic drivers.
5. **International Cooperation**: Global campaigns and shared mental health frameworks across WHO members.

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8. Conclusion

This analysis reveals that suicide is a complex issue influenced by age, gender, geography, and socioeconomic status. Tackling it requires a data-driven, holistic approach combining healthcare policy, public awareness, and ongoing surveillance of at-risk groups. Continued research, better data collection, and proactive policies can collectively reduce global suicide rates.