

# A Journey through Decades of Global Suicide rates



Group 2



Meet

# THE MEMBERS



Nur Dini Hayati  
PE22006



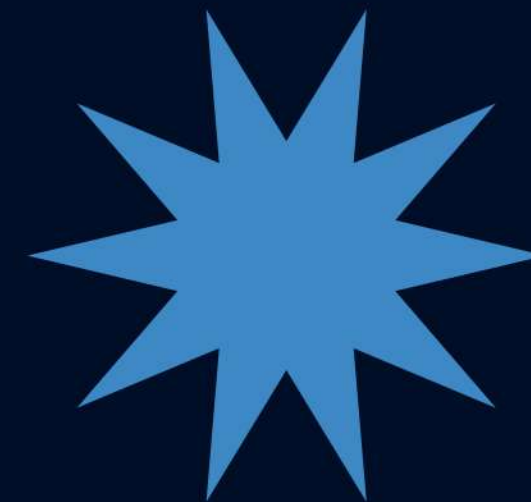
Nur Balqis  
PE22005



Nurshadirah  
PE22026



Hafizh Zaim  
PE22013





# INDEX

- 01 – Introduction
- 02 – Project Description
- 03 – Data Description
- 04– Data Preparation
- 04– Analysis Dashboard
- 04 – Conclusions





# 01-INTRODUCTION

## What is the study about?

Exploring global suicide rates from 1985 to 2016 offers crucial insights into mental health challenges worldwide, especially for hospitals and public health policymakers. By analyzing this data, hospitals can better understand trends and develop targeted strategies to address the root causes of increasing suicide rates. With data-driven approaches, they can improve mental health services and contribute to better outcomes for communities globally.



## Objective

- Identify trends in suicide rates across different demographics and countries.
- Analyses the impact of age, gender, and economic status on suicide rates.
- Provide insights to inform policy decisions and preventive measures.



# 02-PROJECT DESCRIPTION

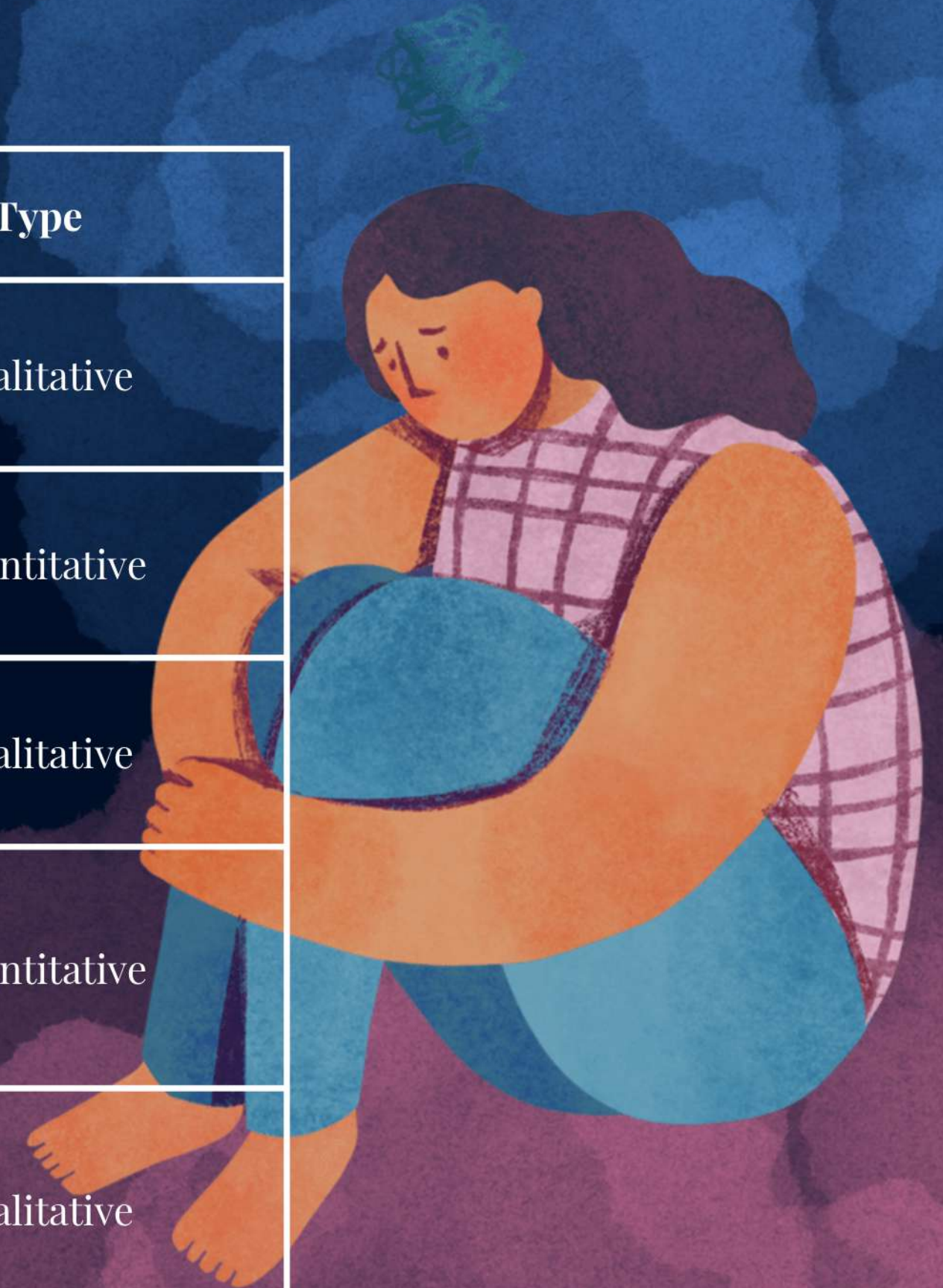
- Analyse global suicide rate datasets from 1985 until 2016, consisting of country, gender and age.
- The goal is to know how many suicides happened from 1985 until 2016 and what generation are they from all over the world.
- The project aims to help hospitals investigate why suicide occurs regardless of age and gender.
- The inspiration for this project comes from the news that discovered the suicide rate in Malaysia and the hospitals that use data analytics to calculate how many suicides happen in a year.
- Examine the suicides rate in several nations, analyse the disparities between age and gender groups and study how economic measures such as HDI and GDP affect the suicides rate





# 03-DATA DESCRIPTION

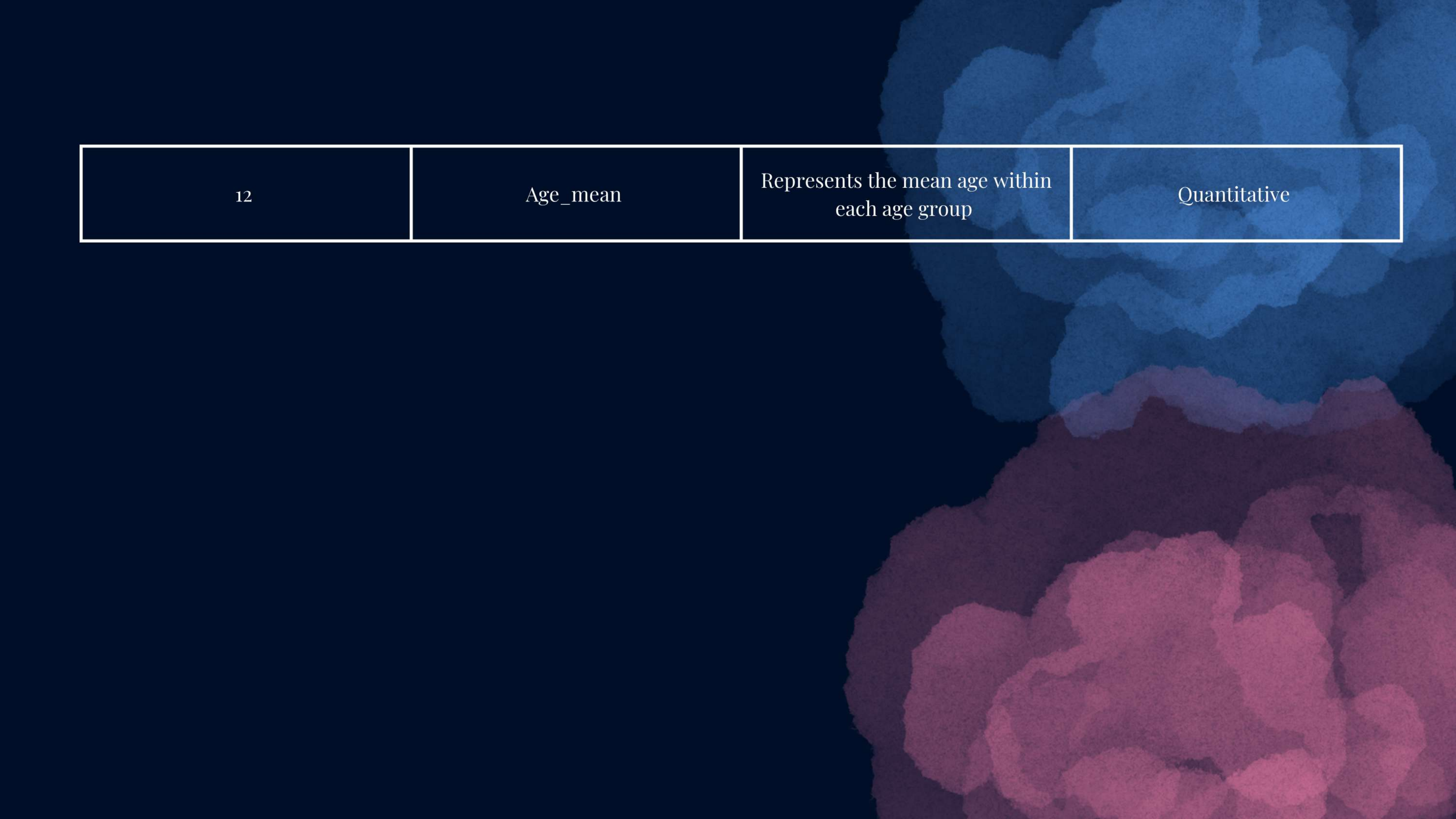
No	Title	Explanation	Type
1	Country	Represents the name of the country.	Qualitative
2	Year	Represents the year the data was collected.	Quantitative
3	Sex	Represents the gender of the individuals.	Qualitative
4	Suicides_no	Represents the number of suicides in each age group.	Quantitative
5	Age	Represents the age group of the individuals.	Qualitative





6	Population	Represents the population size of each age group.	Quantitative
7	suicides/100k pop	Represents the suicide rate per 100,000 people in each age group.	Quantitative
8	HDI for year	Represents the Human Development Index (HDI) for the country in the given year.	Quantitative
9	Gpy	Represents the GDP for the year in some unit of measurement (e.g., dollars or euros).	Quantitative
10	Gdp_per_capita	Represents the GDP per capita.	Quantitative
11	Generations	Represents the generational cohort of the individuals.	Qualitative





12	Age_mean	Represents the mean age within each age group	Quantitative
----	----------	---	--------------



# 04-DATA PREPARATION

## Load Libraries and Import Dataset:

- readxl, dplyr, writexl.
- Use read\_xlsx().

## Initial Exploration:

- Explore initial data with head(), tail(), str(), dim(), and names().

## Data Cleaning:

- Check and remove missing values with anyNA(), is.na(), and na.omit().
- Remove Duplicates using distinct()
- Drop Unnecessary columns using select() to remove irrelevant columns.
- Re-examine cleaned data with str(), head(), and dim().

## Enhance Dataset:

- Add age\_mean column using mutate() and sapply() with a custom function.

## Final Examination:

- Confirm changes with str() and dim().

## Save Cleaned Data:

- Use write\_xlsx() to save the refined dataset.

```
27 - ...[[r]]
28 anyNA(dt)
29 colSums(is.na(dt))
30 dt_clean <- na.omit(dt)
31 anyNA(dt_clean)
32
33 remove_duplicate_rows <- dt_clean %>% distinct()
34 dt_clean_2 <- dt_clean %>% select(-`country-year`)
35
36 str(dt_clean_2)
37 head(dt_clean_2)
38 dim(dt_clean_2)
39
40 # Function to calculate mean for age ranges
41 mean_age <- function(age_range) {
42   if (age_range == "75+ years") {
43     return(87.5) #assuming the upper bound is 100 years old
44   } else {
45     range <- as.numeric(unlist(strsplit(gsub(" years", "", age_range), "-")))
46     return(mean(range))
47   }
48 }
49
50 # Apply the function to the age column and create a new column for median age
51 dt_clean_2 <- dt_clean_2 %>%
52   mutate(age_mean = sapply(age, mean_age)) %>%
53   relocate(age_mean, .after = age)
54
55 str(dt_clean_2)
56 dim(dt_clean_2)
57 names(dt_clean_2)
58
59 write_xlsx(dt_clean_2, "Cleaned_Suicide_Data.xlsx")
60 print("Cleaned data has been saved to 'Cleaned_Suicide_Data.xlsx'")
61 - ...
```

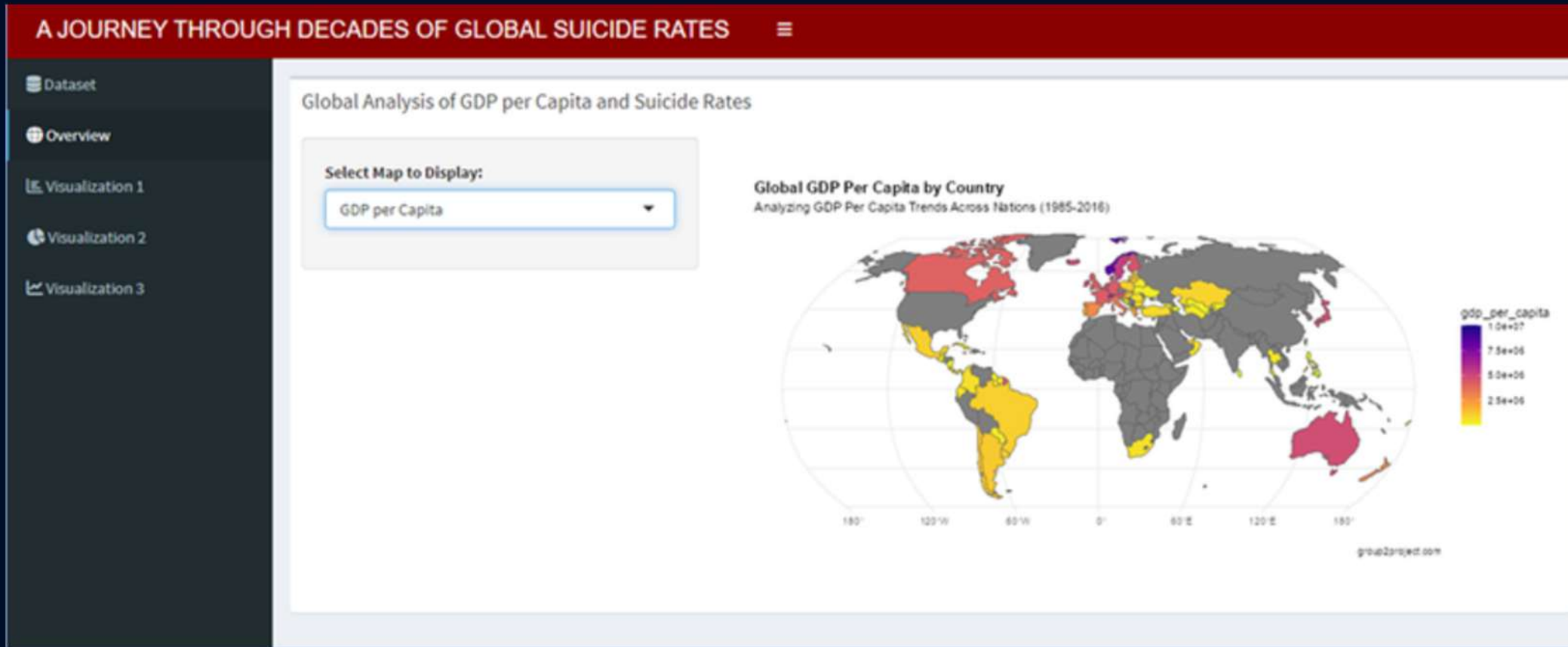


# 05- DATA ANALYSIS, RESULT AND DISCUSSION





# Analyzing Global GDP per Capita



The map illustrates global GDP per capita by country from 1985 to 2016, indicating average income levels. GDP per capita is crucial as it reflects overall wealth and potential societal pressures. Countries like Norway and Luxembourg, shown in deep purple, boast the highest incomes. Following closely in deep pink are Sweden, Australia, and Japan, while Uzbekistan, Paraguay, and French Guiana, in yellow, exhibit lower average incomes. This variation suggests that higher wealth may correlate with increased societal expectations, potentially impacting mental health and well-being.

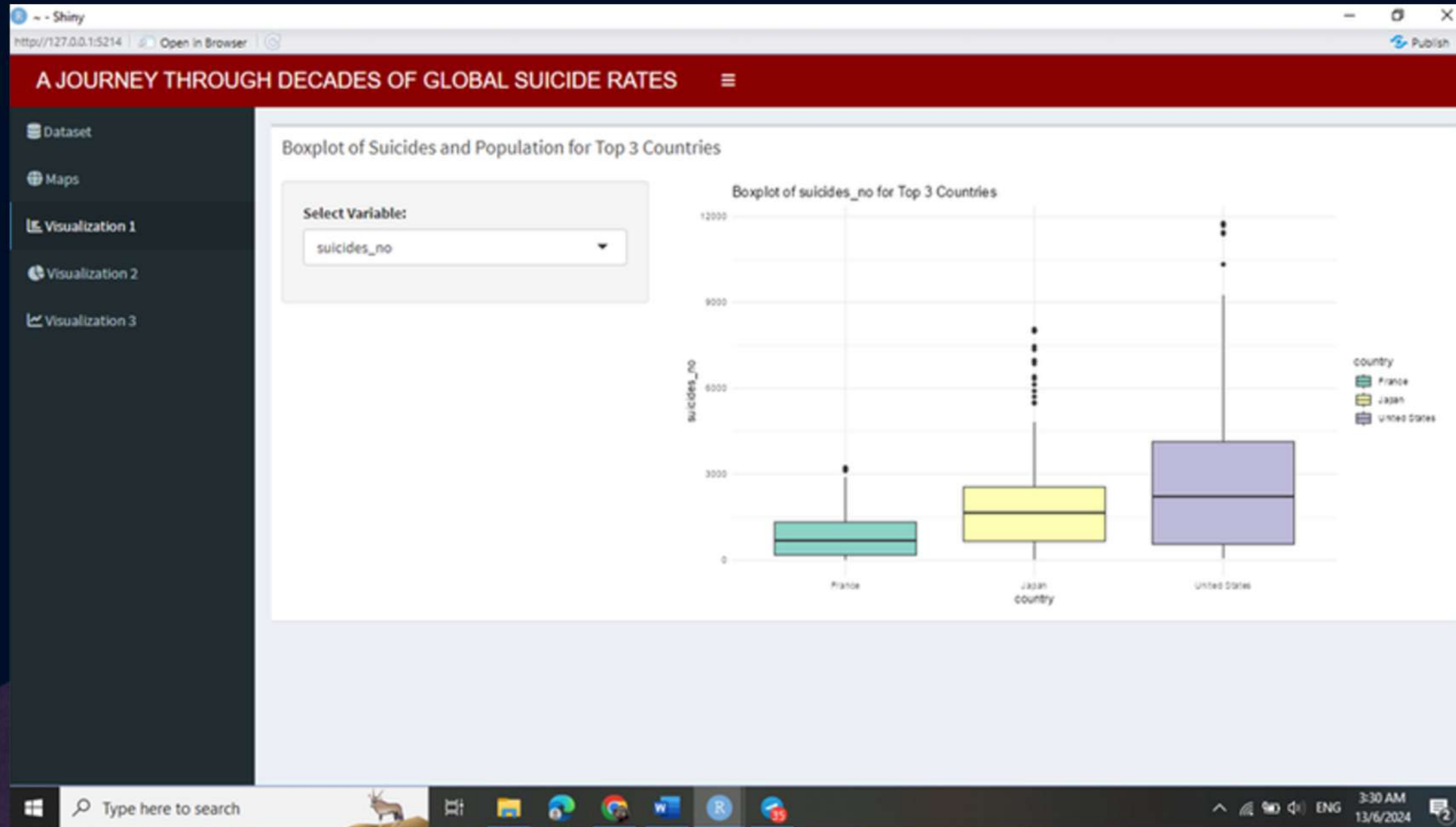
## Analyzing Global Suicides no

A filled map analyzing the number of suicides by country, using the same application as the global GDP per capita map. The blue color range measures the number of suicides, with darker shades indicating higher numbers. Several countries, such as France, Germany, Poland, Ukraine, Brazil, and French Guiana, display relatively intense blue colors, indicating high suicide rates. Japan is recorded as having the most suicides, shown in the darkest blue range.





# Boxplot for Suicides in Top 3 Countries



## United States

- The median number of suicides is the highest among the three countries.
- The IQR is the widest, indicating the highest variability in suicide numbers.
- Several outliers are present above the upper whisker, indicating some exceptionally high values.

## Japan

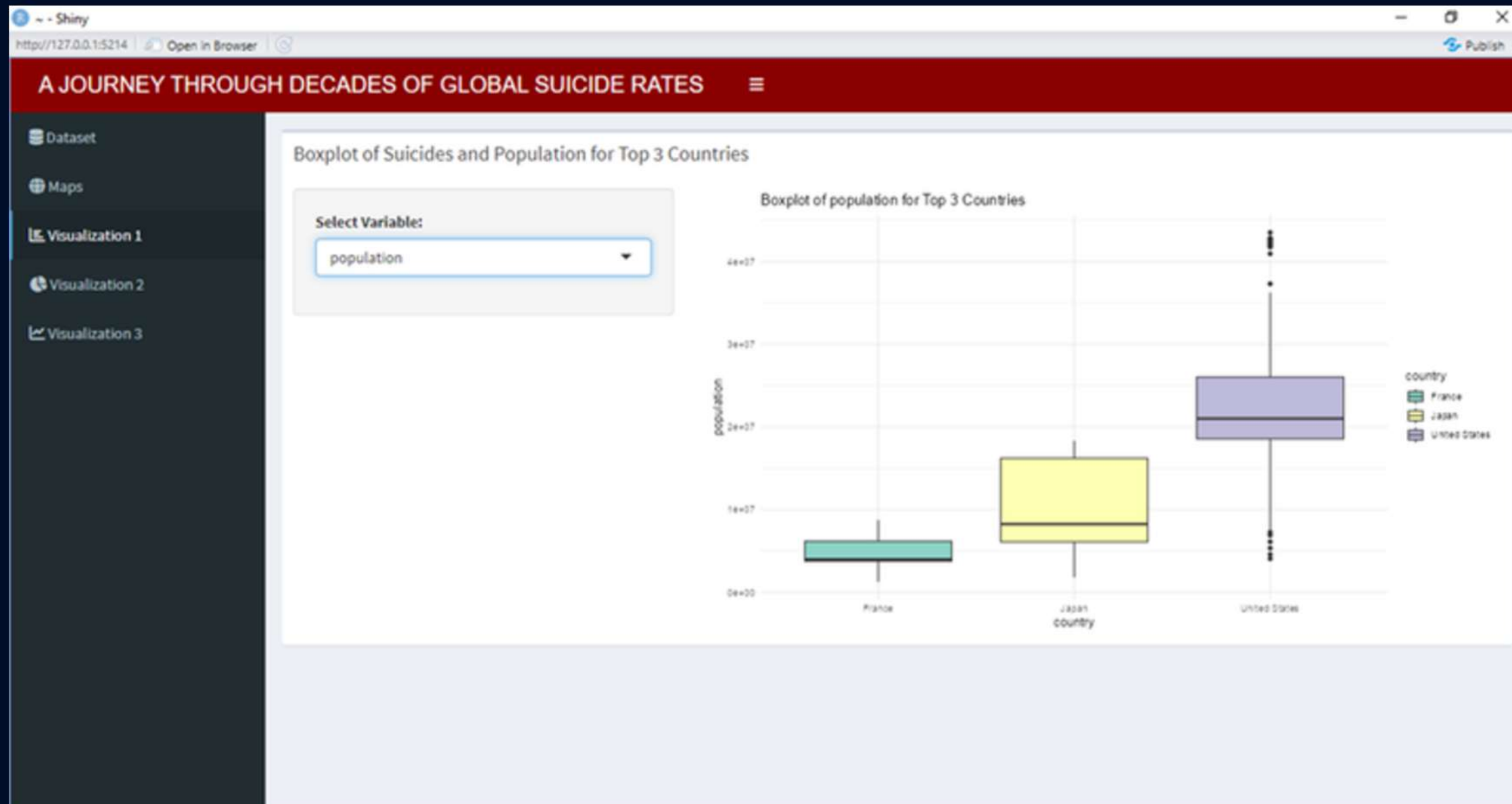
- The median number of suicides is higher than France but lower than the United States.
- The IQR is wider than France's, indicating more variability.
- There are numerous outliers above the upper whisker.

## France

- The median number of suicides is relatively low compared to Japan and the United States.
- The IQR is also quite narrow, indicating less variability in the number of suicides.
- There are some outliers above the upper whisker.



# Boxplot for Population in Top 3 Countries



## United States

- The median population is the highest among the three countries.
- The IQR is the widest, indicating the highest variability in population figures.
- Several outliers are present above and below the whiskers, indicating some exceptionally high and low population values.

## Japan

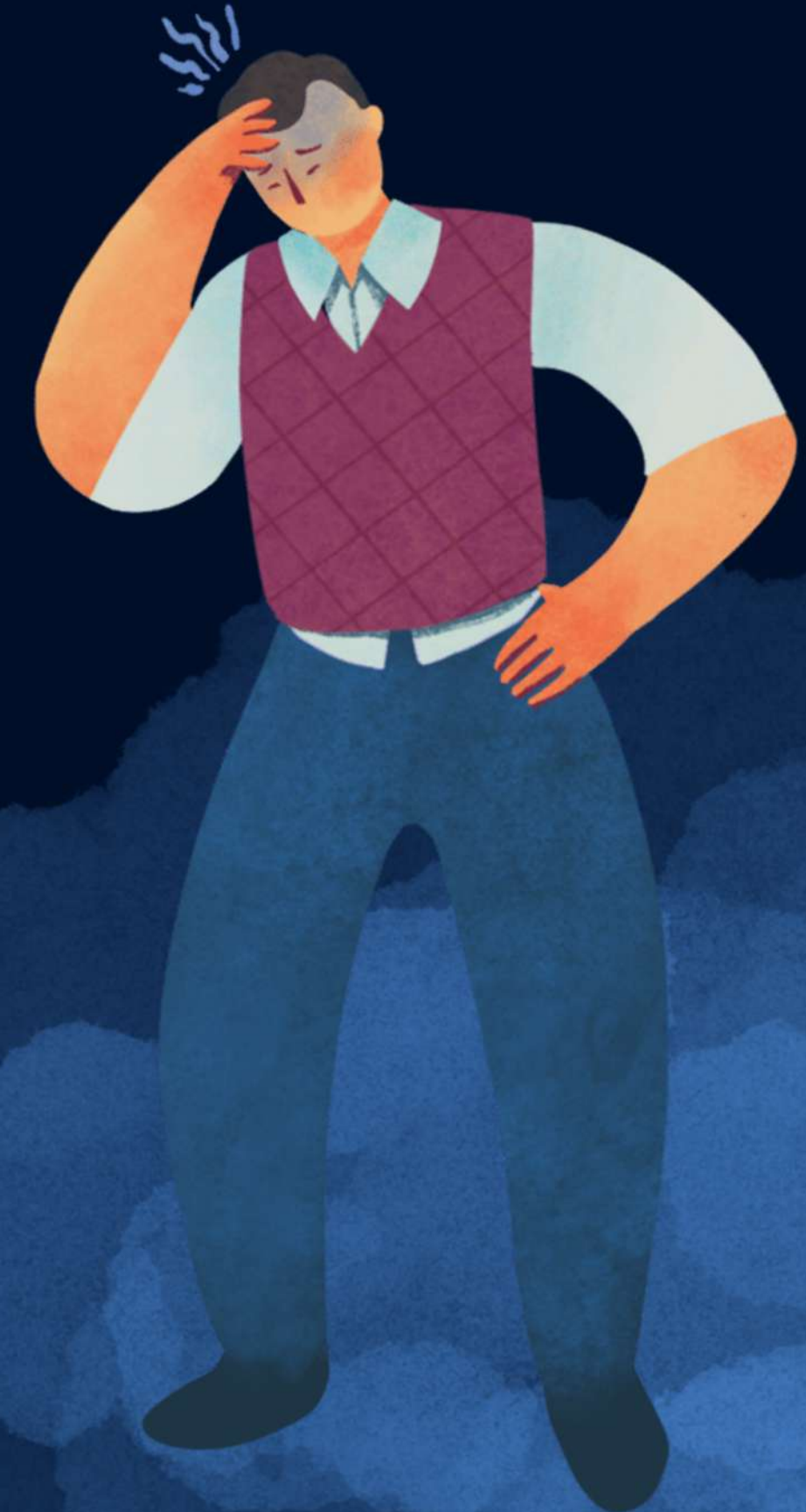
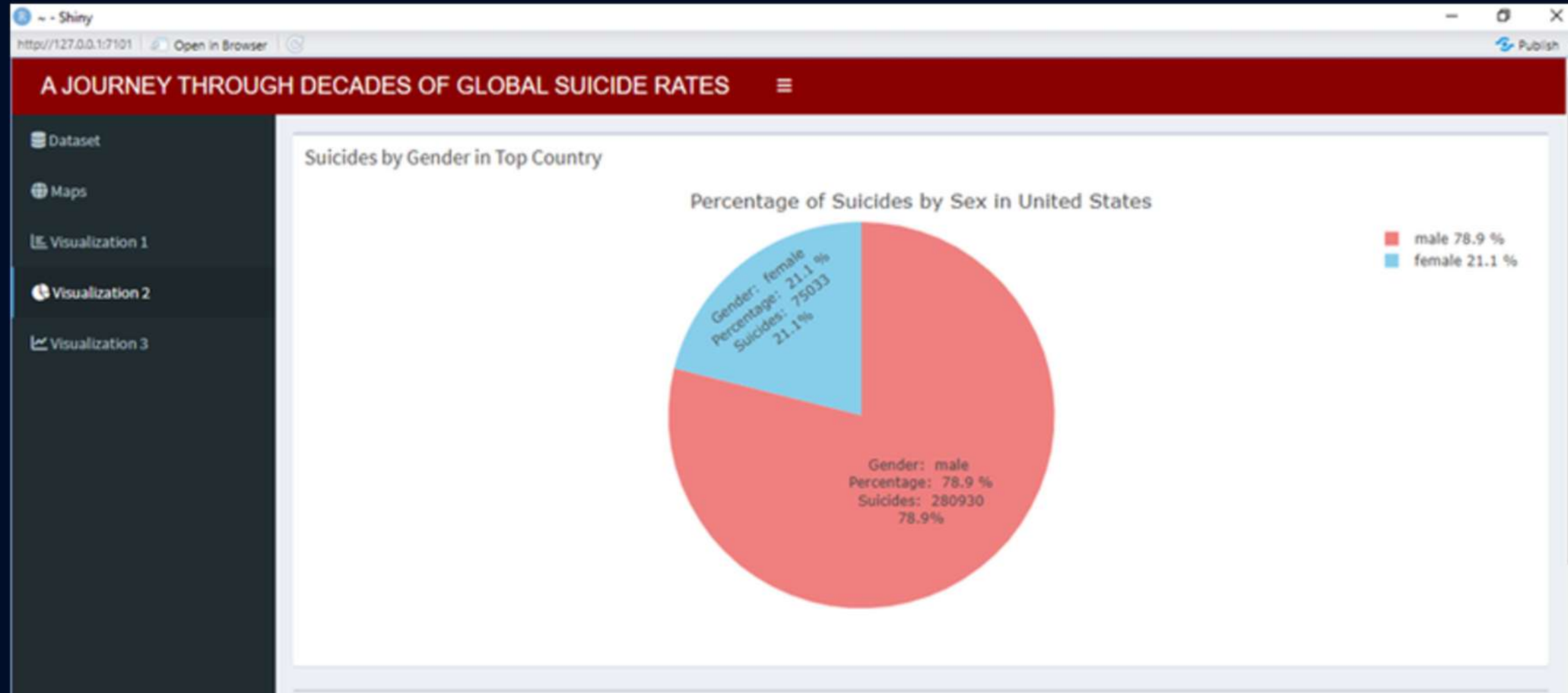
- The median population is higher than France but lower than the United States.
- The IQR is wider than France's, indicating more variability.
- No visible outliers.

## France

- The median population is lower than Japan and the United States.
- The IQR is narrow, indicating less variability in population figures.
- No visible outliers.



# Suicides by Gender in Top Country



- Males:
  - 78.9% of suicides
  - 280,930 cases
- Females:
  - 21.1% of suicides
  - 75,033 cases
- Significant gender disparity in suicide rates
- Males have a higher suicide rate than females
- Males are far more likely to commit suicide than females
- Need for gender-specific intervention strategies
- Understanding root causes of higher male suicide rates
- Providing resources and support to at-risk individuals
- Implementing effective suicide prevention initiatives



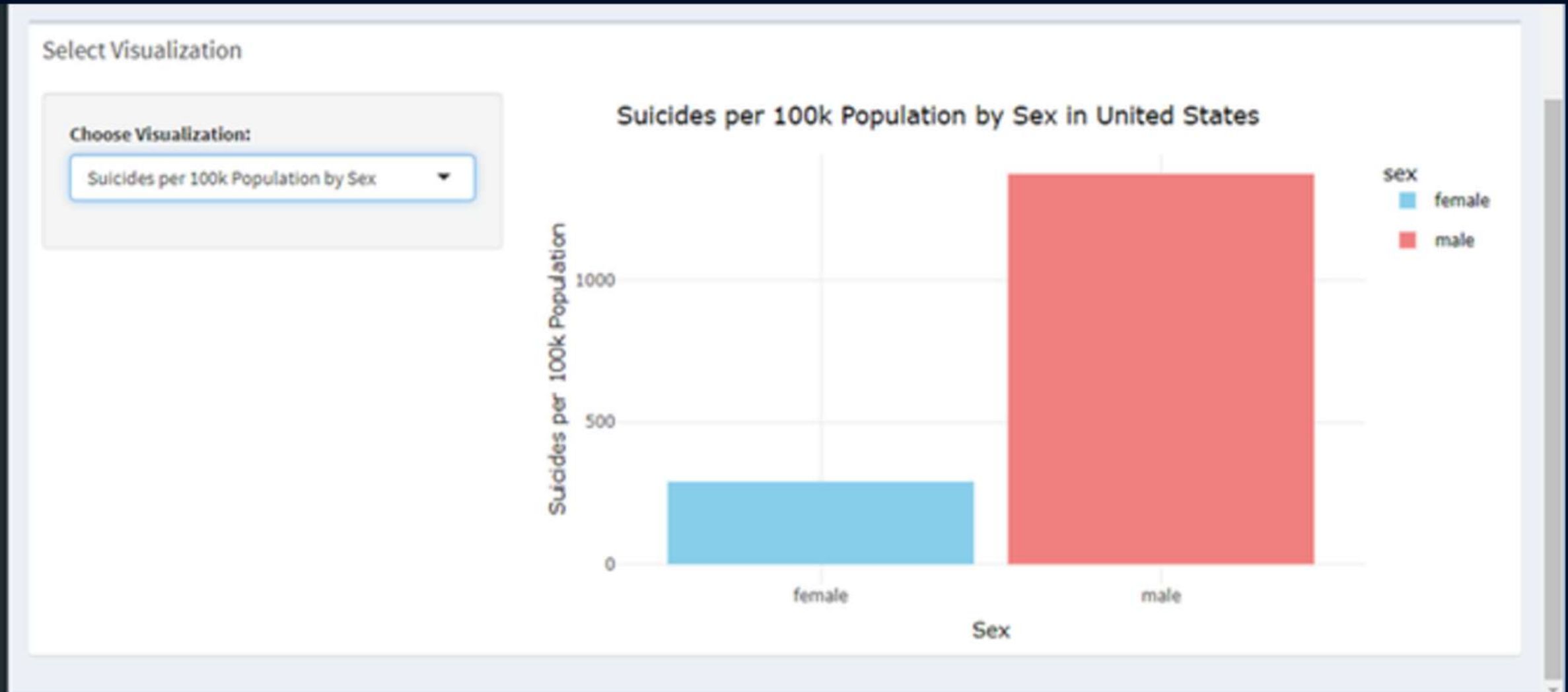
# SUICIDE DATA ANALYSIS



- Highest Median Age of Suicides:
  - 75+ years age group
  - 55-74 years age group (closely follows)
- Lowest Median Age of Suicides:
  - 5-14 years age group
- Older age groups have a higher median age at the time of suicide
- The median age of suicide increases with age, peaking in the 75+ age range
- Older populations (especially 55+) are more vulnerable to suicide
- Addressing factors influencing increased suicide risk in older populations
- Providing focused treatments and support systems for older adults



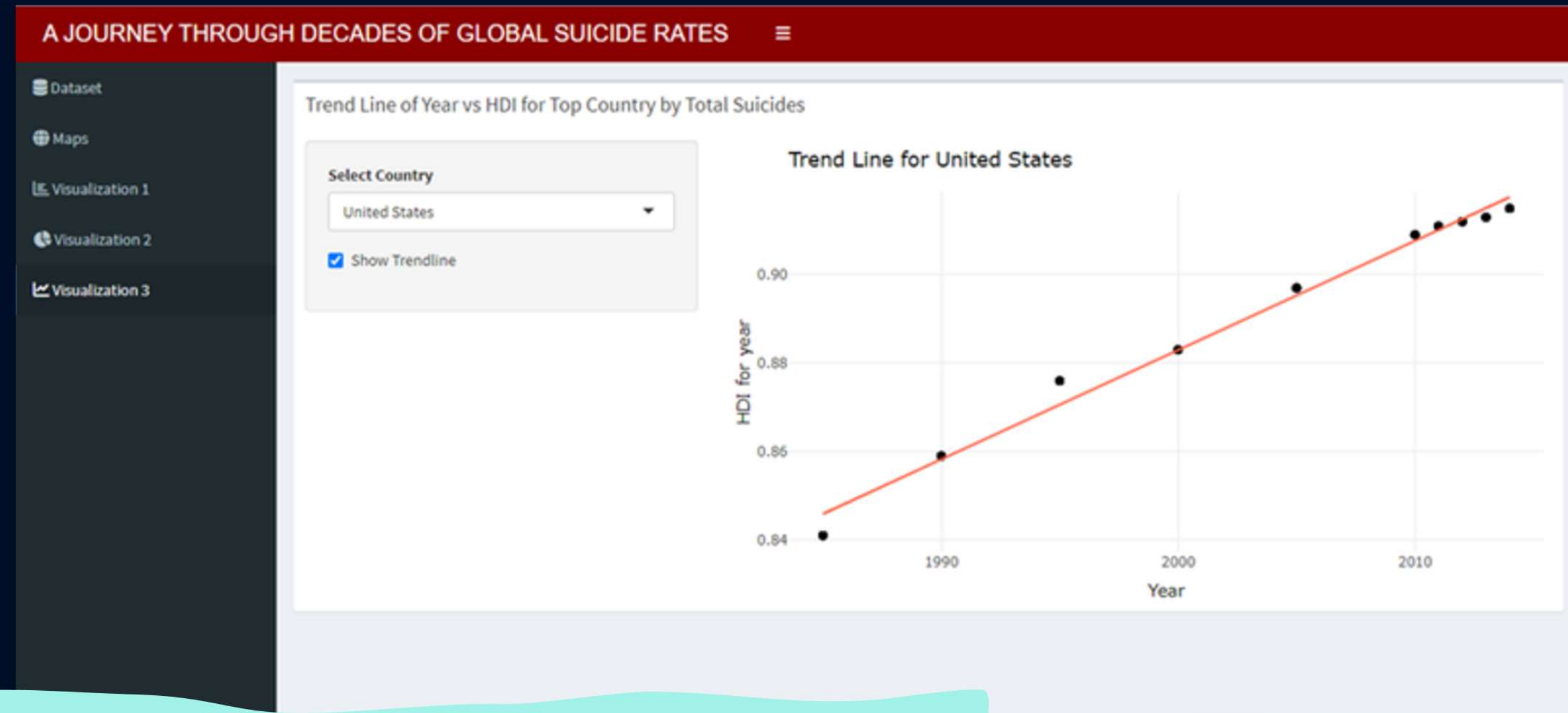
# SUICIDE DATA ANALYSIS



- Suicide Rates by Gender in the US
  - Men commit suicide at higher rates than women
- Male bar much taller than female bar
- Indicates more suicides per 100,000 people among men
- Increased risk of suicide among men
- Stark gender disparity in suicide rates
- Serious issue requiring attention and action
- Men face unique difficulties and vulnerabilities
- Need for specialized treatments and support networks for men
- Gender-sensitive mental health promotion
- Focus on suicide prevention initiatives tailored to men



# TREND LINE OF YEARS VS HDI (USA)



## Interpretation:

- **Consistent Growth:** HDI shows a steady upward trend over the years, reflecting improvements in healthcare, education, and living standards.
- **Despite HDI gains, the USA has the highest suicide rates.**
- **Approach Needed:**
  - Mental Health Integration, Support Systems, and public awareness initiatives for effective suicide prevention.



# 06-CONCLUSION

we're delving into global suicide rates, examining trends across different demographics and regions. Our study uncovers significant variations in these rates, underlining the urgent need to address mental health issues worldwide. We explore how socioeconomic factors influence suicide rates, revealing complex patterns. Through interactive dashboards, policymakers and health professionals can pinpoint at-risk populations, implement targeted interventions, and devise evidence-based strategies to reduce global suicide rates. By leveraging data-driven insights, we aim to enhance prevention efforts, allocate resources effectively, and foster mental health resilience on a global scale.





# 07 – LIMITATIONS

## Limitation 1

- **Temporal Range (1985–2016):** Does not capture recent trends, including post-2016 events like the COVID-19 pandemic.

## Suggestion

- **Update Data:** Include recent data for a current understanding. Collaborate with organizations tracking global health metrics for up-to-date information.



## Limitation 2

- **Limited Variables:** Focuses on country, year, gender, age, GDP, and HDI, missing other influencing factors.

## Suggestion

- **Expand Variables:** Incorporate mental health policies, cultural aspects, social support systems, and qualitative data for comprehensive analysis.



Presentation

Thanks

Group 2