Analyzing the Impact of Socioeconomic Factors on Suicide Rates in Bangladesh

A thesis report submitted to Department of Statistics and Data Science, Jahangirnagar University, Savar, Bangladesh, in partial fulfillment of the requirement for the degree of "Master of Science" in Applied Statistics and Data Science.

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INTRODUCTION

- Suicide is a major public health issue worldwide.

- According to the World Health Organization (WHO), approximately 800,000 people die by suicide annually.

- Bangladesh, a South Asian country with over 160 million people, faces significant public health challenges, including mental health issues.

- Bangladesh faces a significant suicide problem, with estimates indicating thousands of deaths annually.

- This study focus on the Impact of socioeconomic factors on suicide rates in Bangladesh.

OBJECTIVE OF THE STUDY

- Determine the correlation between socioeconomic factors and suicide rates in Bangladesh to understand the demographic and social dynamics contributing to suicide.

- Identify specific vulnerable groups based on profession, age, and other socioeconomic parameters to tailor intervention strategies effectively.

- Contribute to suicide prevention strategies by informing policymakers and health officials through detailed analysis and recommendations

METHODOLOGY

Data Collection and preprocessing

- This dataset was collected from different online news article and newspapers.

- Initially data was collected from 759 respondent.

- After removing the missing data, 309 response was ready for analysis.

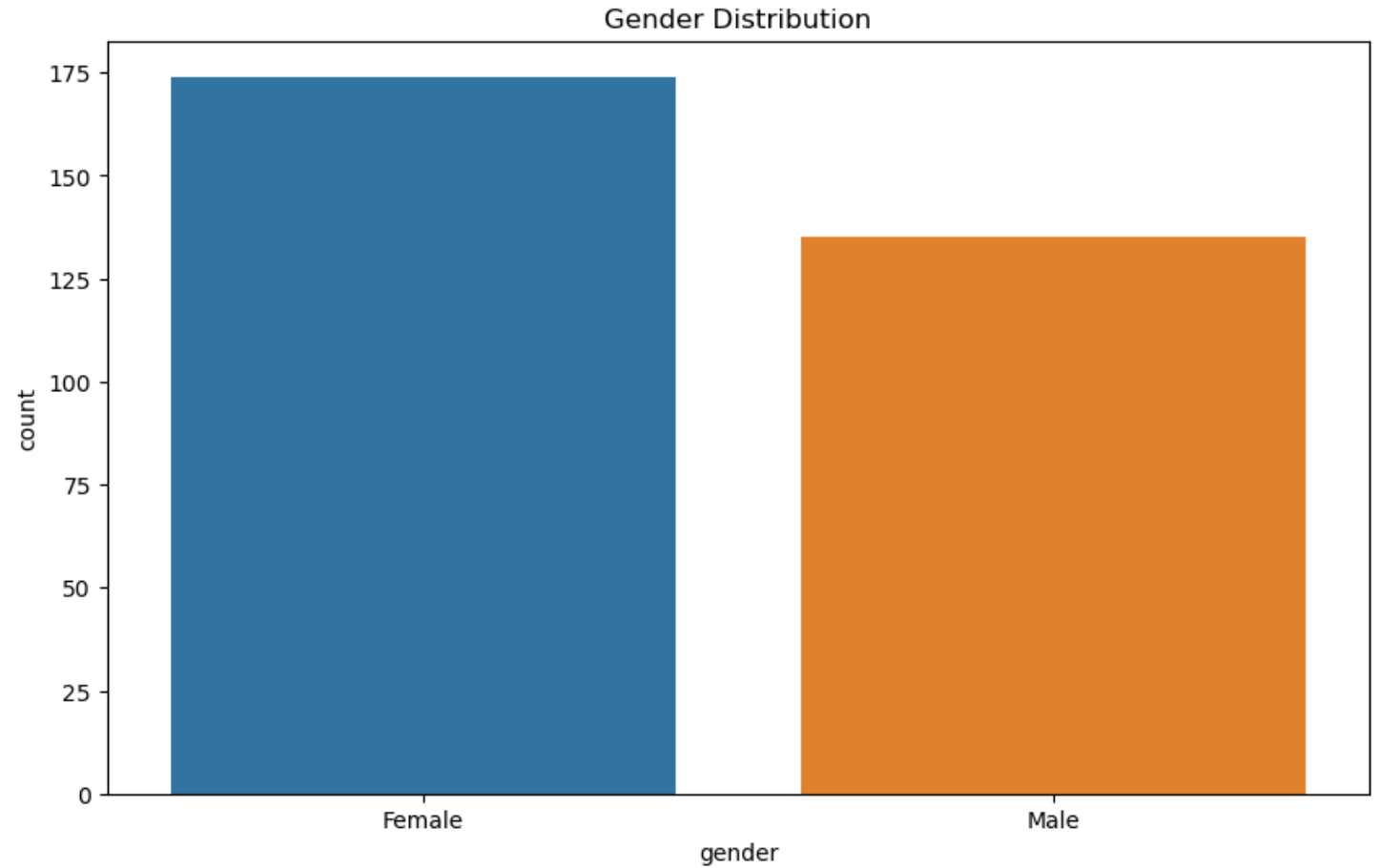- After that, label encoding was done for categorical variables.

METHODOLOGY

Statistical analysis

- Descriptive statistics and different plot was created for getting the proper understanding of the data.

- Chi-square test of independence was performed to find the significant variables

- For the core analysis, binomial logistic regression was applied to identify significant predictors of suicide
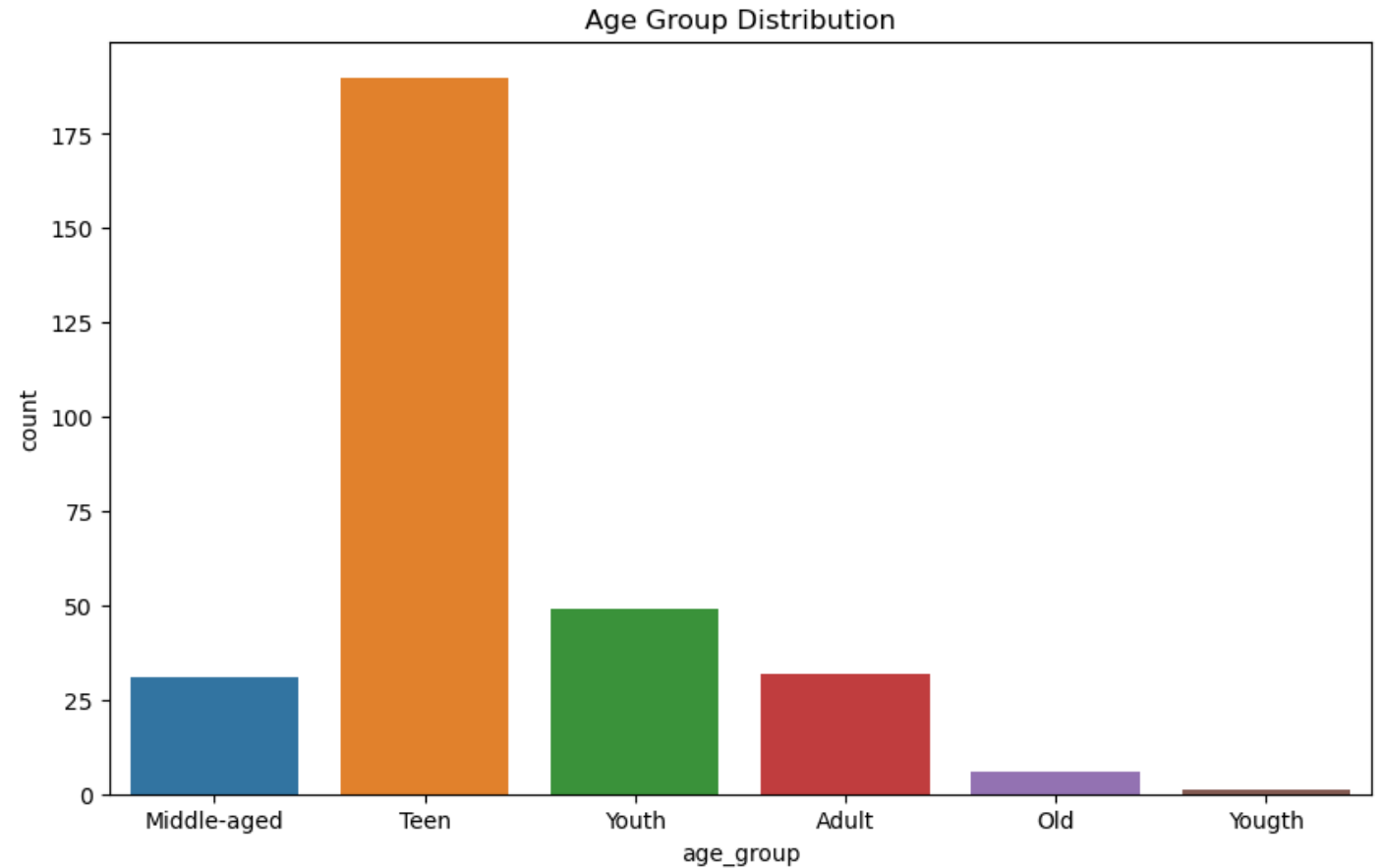
RESULT

Descriptive Statistics

- Gender distribution show that female are committing suicide more than male.
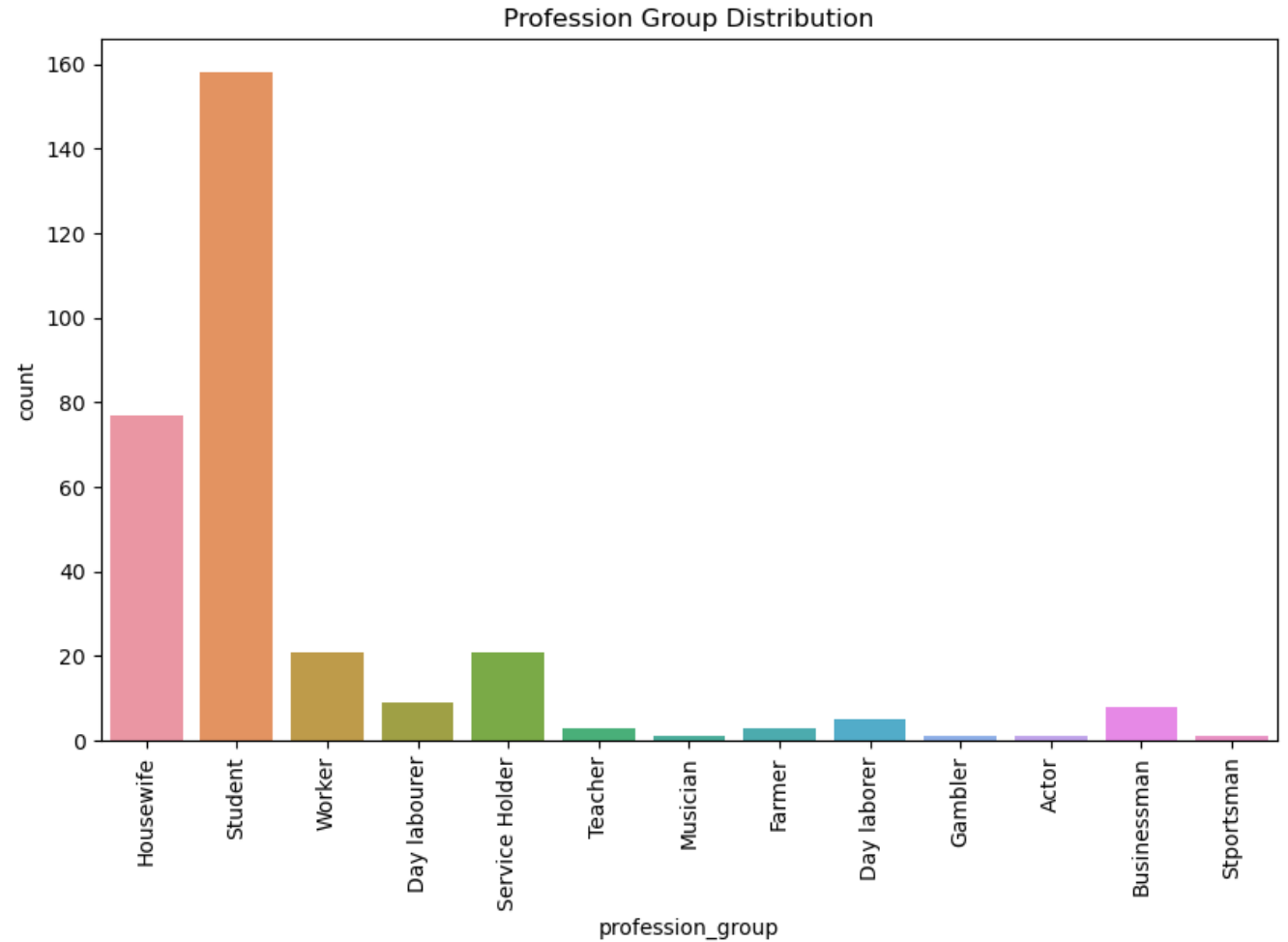
Gender Distribution

RESULT

Descriptive Statistics

- The graph indicates that teenagers have the highest incidence of suicide cases, followed by young adults and middle-aged individuals.
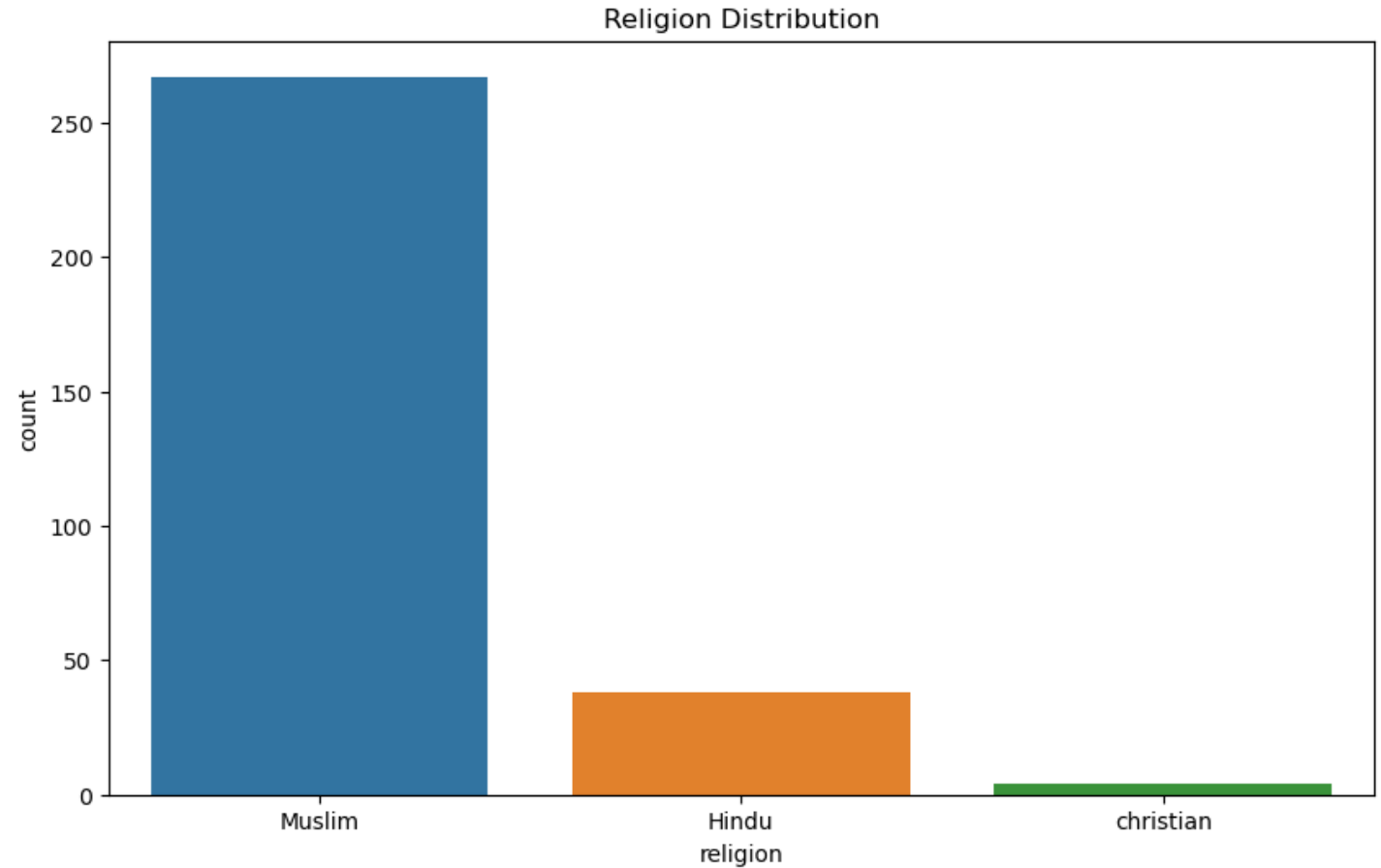

Age Group Distribution

RESULT

Descriptive Statistics

- The graph indicates that student are most affected followed by the housewife and service holder.

Profession Group Distribution

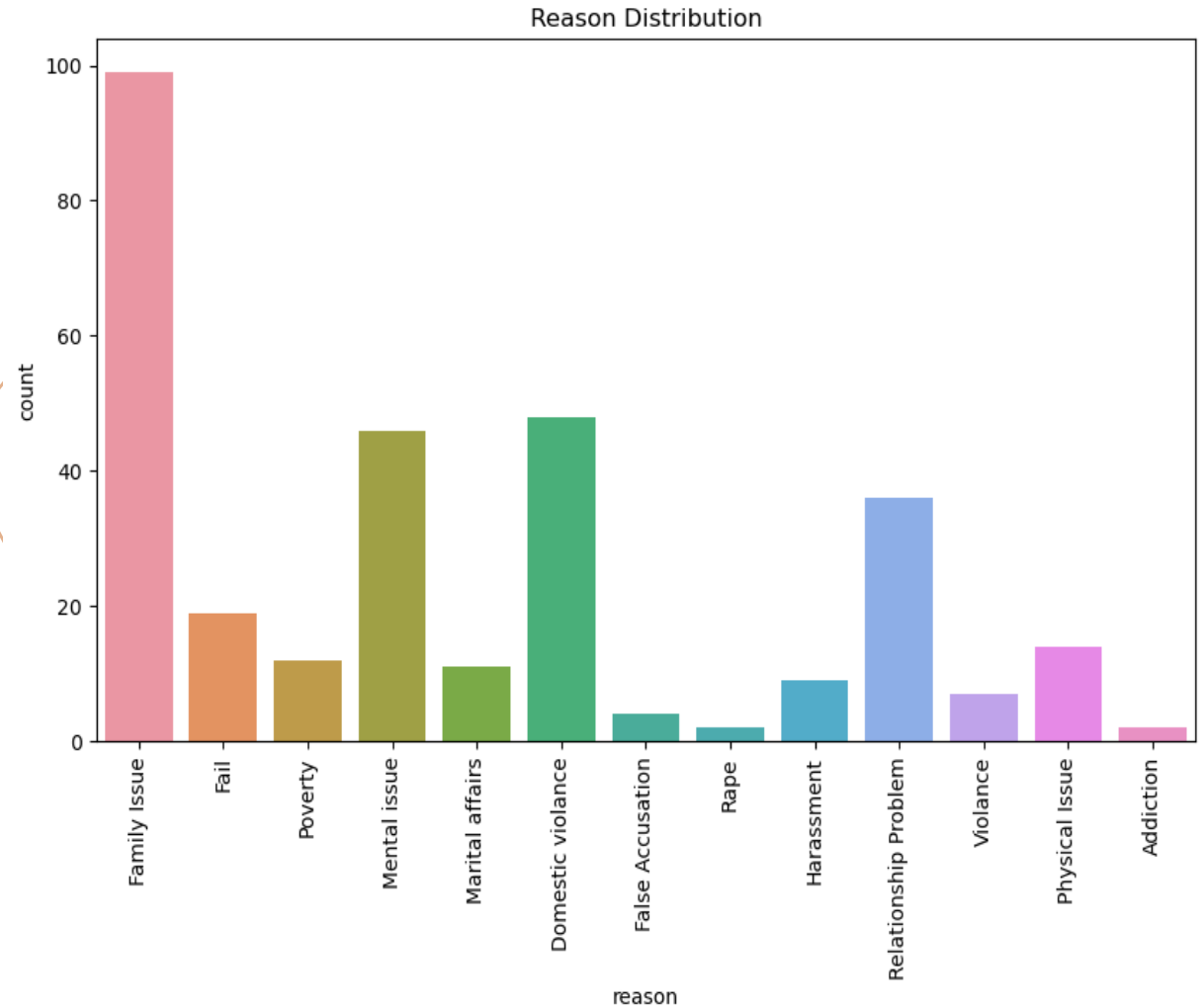# RESULT

Descriptive Statistics

- The analysis of religious affiliations shows that the majority of individuals in the dataset were Muslims, reflecting the predominant religion in Bangladesh

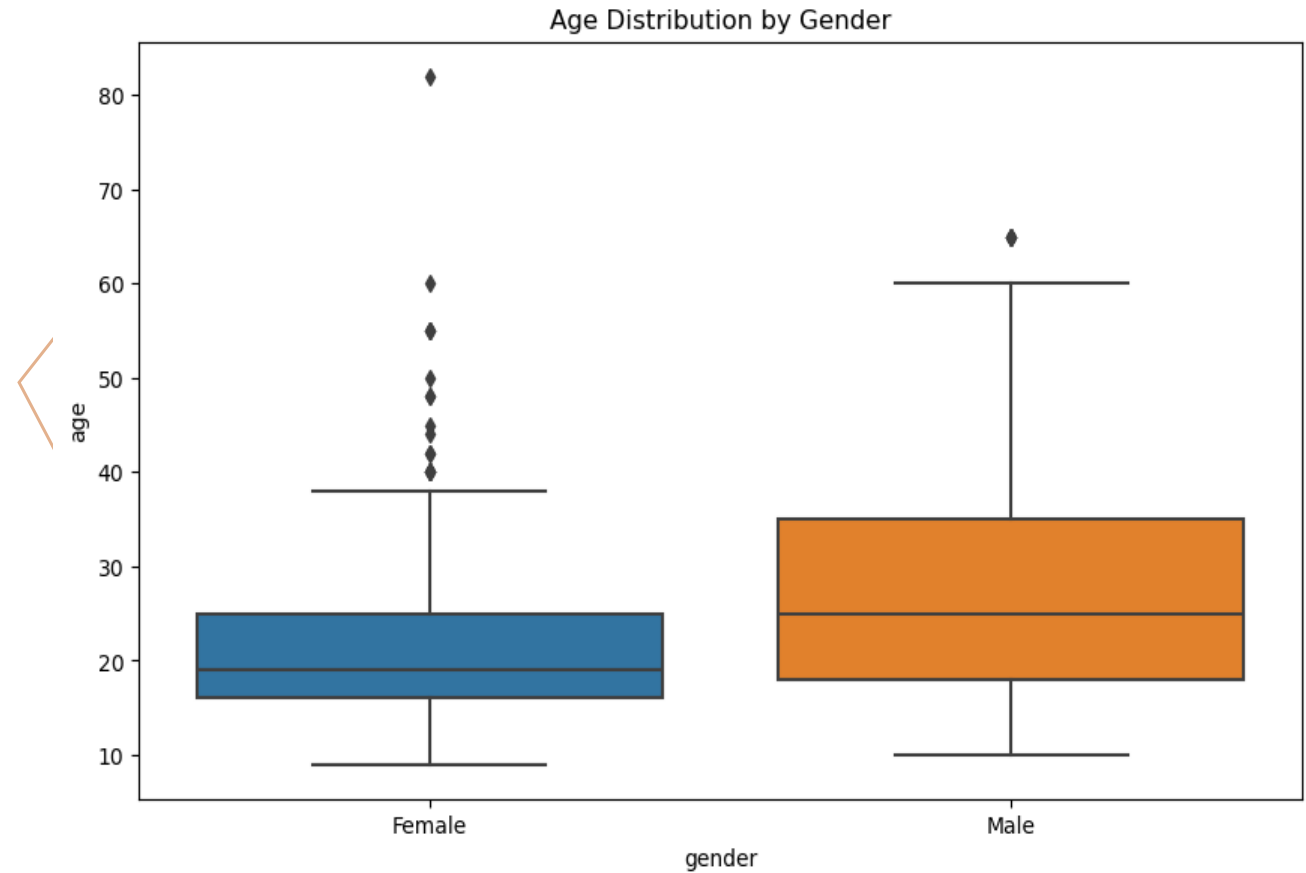Religion Distribution

RESULT

Descriptive Statistics

- The dataset categorizes reasons for suicide into several groups, including family issues, relationship problems, financial difficulties, and more. Family issues and domestic violence emerged as the most common reasons for suicide.

Reason Distribution

RESULT

Descriptive Statistics

- The box plot indicates that suicides among females are more concentrated in the younger age groups, predominantly between 15 and 25 years.
- In contrast, suicides among males occur over a broader age range, with a higher median age and a greater spread from 20 to 35 years

Age Distribution by Gender

RESULT

Chi-square test of independence

Variable	Chi-square value	P-value
Age	8.75	.001
Professional group	13.23	.024
Religion	6.73	.017
Gender	7.73	.002

- Chi-square test of independence was performed to find the significant variables we found that age, professional group, religion and gender statistically Significant

RESULT

Binomial Logistic regression

```
                    coef     std err         z      P>|z|      [0.025     0.975]
-----------------------------------------------------------------------------------
const            -1.8100       0.584    -3.100      0.002      -2.954     -0.666
age               0.0664       0.013     5.018      0.000       0.040      0.092
profession_group -0.2023       0.043    -4.692      0.000      -0.287     -0.118
religion          0.7984       0.389     2.050      0.040       0.035      1.562
hometown          0.0003       0.002     0.118      0.906      -0.005      0.005
reason           -0.0029       0.039    -0.075      0.940      -0.079      0.074
weather_main      0.0491       0.071     0.693      0.488      -0.090      0.188
===================================================================================
```

- The coefficient for **age** is 0.0664, indicating that as age increases, the likelihood of suicide increases. This effect is statistically significant (p < 0.05)
- The coefficient for profession group is -0.2023, suggesting that being in certain profession groups is associated with a lower likelihood of suicide. This effect is statistically significant (p < 0.05).

RESULT

Binomial Logistic regression

- The coefficient for **religion** is 0.7984, indicating that religious affiliation is associated with a higher likelihood of suicide. This effect is statistically significant ($p < 0.05$).

- The coefficients for hometown, reason, and weather main are not statistically significant ($p > 0.05$), suggesting these variables do not have a meaningful impact on the likelihood of suicide.

DISCUSSION AND IMPLICATIONS

- Younger individuals and females are more vulnerable; economic and familial stressors play a significant role.

- Teenagers and young adults exhibit higher suicide rates.

- Academic pressure, relationship issues, and societal expectations are predominant stressors for this age group.

- Government should take steps to Improve job security, financial assistance, and mental health support services.

FUTURE RESEARCH AND RECOMMENDATIONS

- Longitudinal Studies: Track changes over time to understand causal relationships.

- Policy Evaluation: Assess effectiveness of current policies and interventions.

CONCLUSION

- Socioeconomic factors such as profession, religion significantly influence suicide rates.
- Government should develop targeted interventions to address these issues and improve mental health support in Bangladesh

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THANK YOU