

# Social media effects on Mental Health

by Group 1 \ Supervised by Dr. Khulood Alyahya

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# Content

## OVERVIEW OF KEY IDEAS

Goals

Data Source : Primary

Key Findings for Primary Data

Data Visualization for Primary Data

Model Performance and Predictions

challenges & Solutions

Conclusion

# Goals

- Explore social media usage and popular platforms.
- Analyze mental and emotional effects like stress and productivity and strives for accurate, reliable, and realistic results.
- Compare data from Saudi Arabia and another country using primary and secondary data for realistic insights.

# Objective: Analyze how social media usage affects mental health in Saudi Arabia.

## Data Source : Primary & Secondary

### Independent Variables (Features):

- Age
- Gender
- Area
- Current Educational Level
- Marital Status
- Employment Status

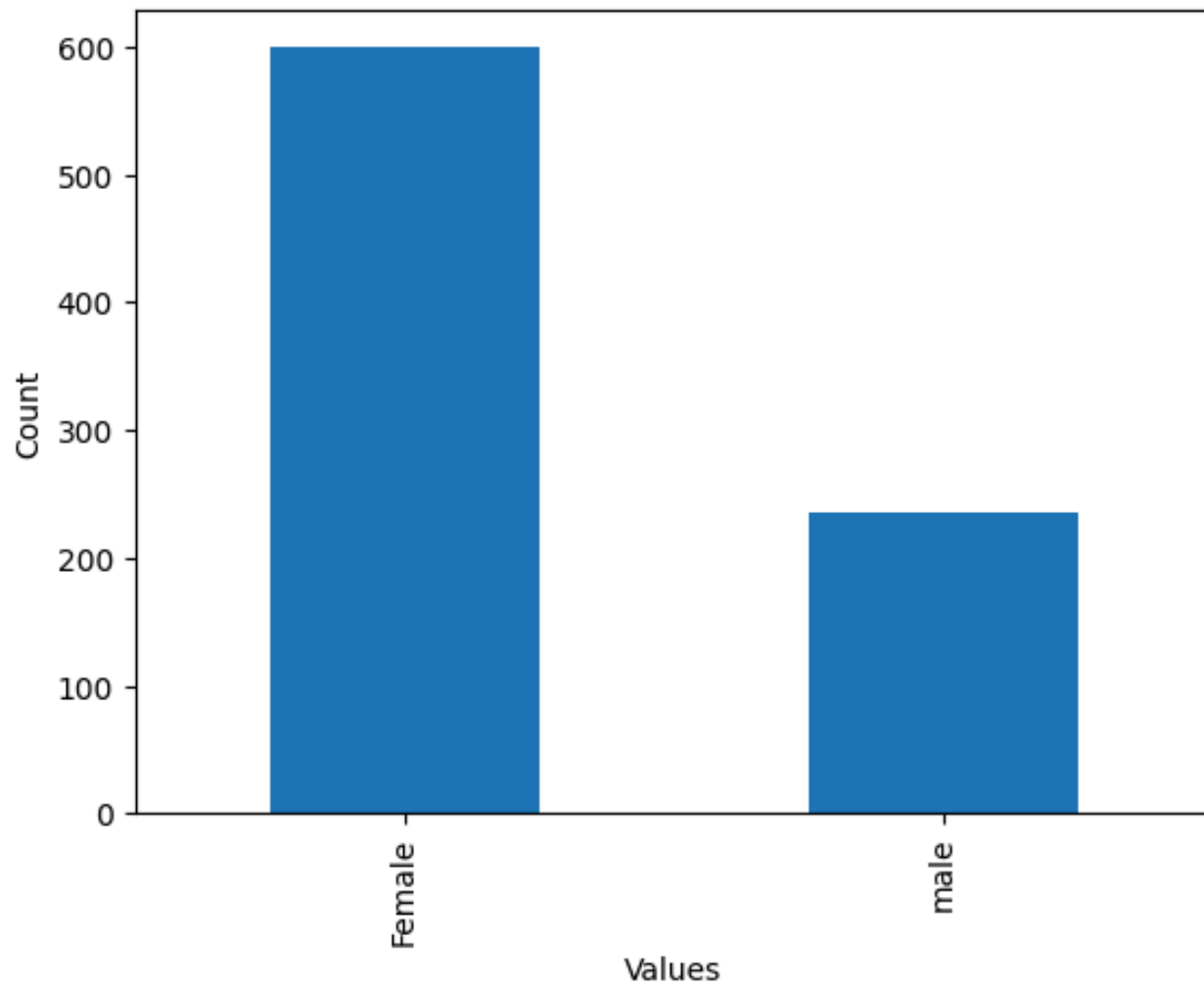
### Dependent Variables( Target ):

- Self-Esteem (35%)
- Social Anxiety (25%)
- Insomnia (20%)
- Fear of Missing Out (FOMO) (15%)
- Shorter Attention Span (5%)

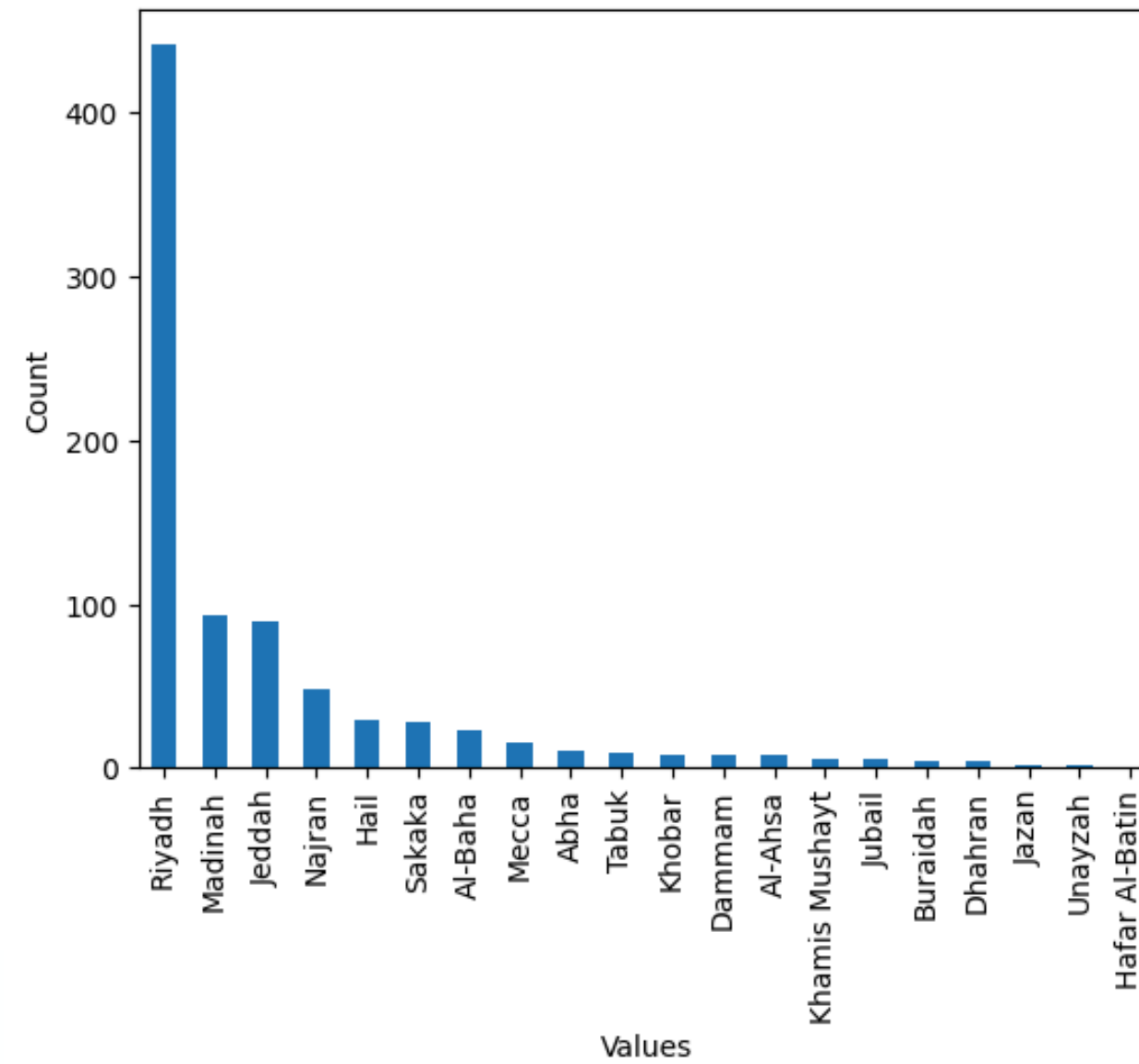


# Key Findings for Primary Data

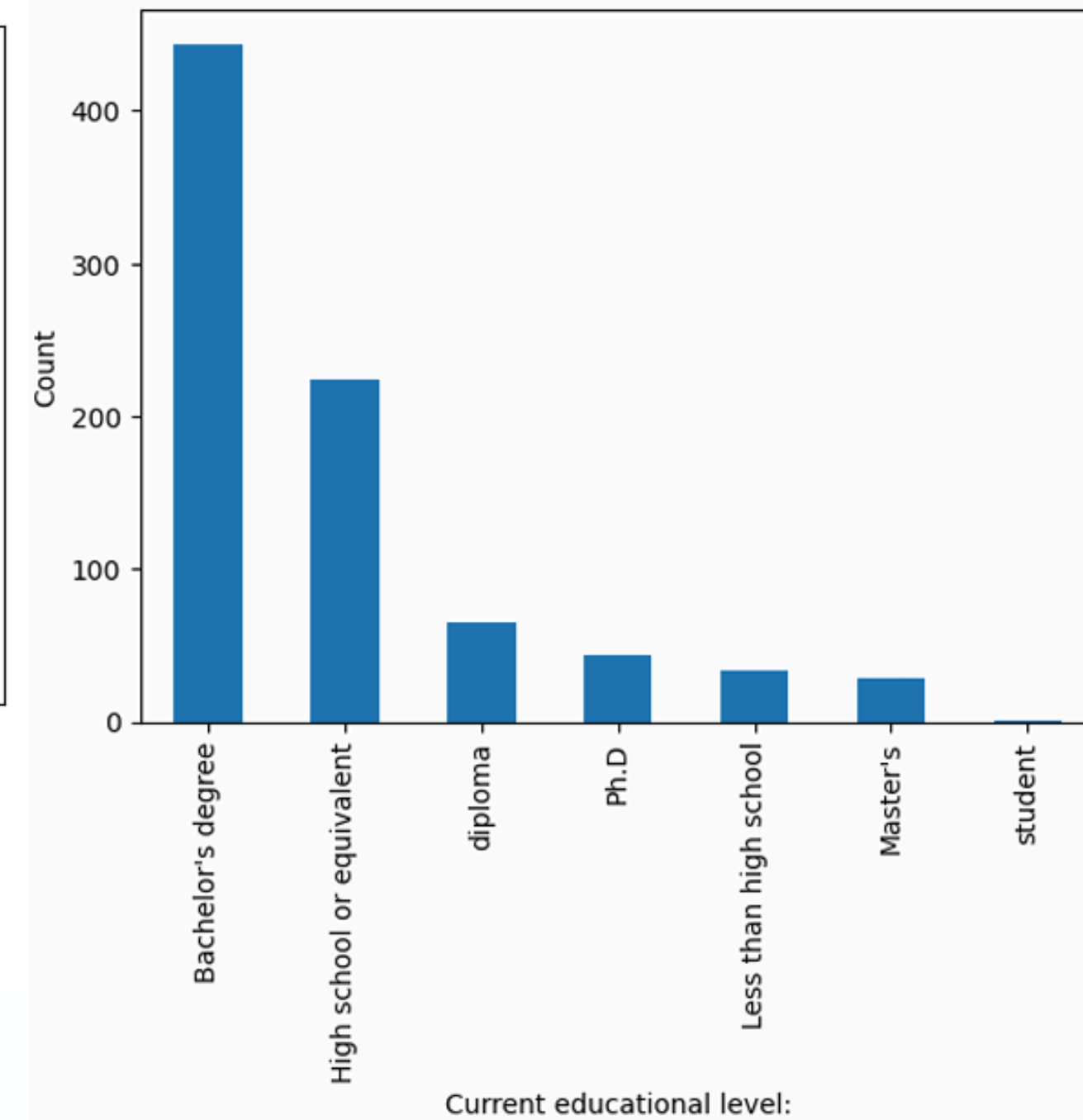
Value Counts for Gender:



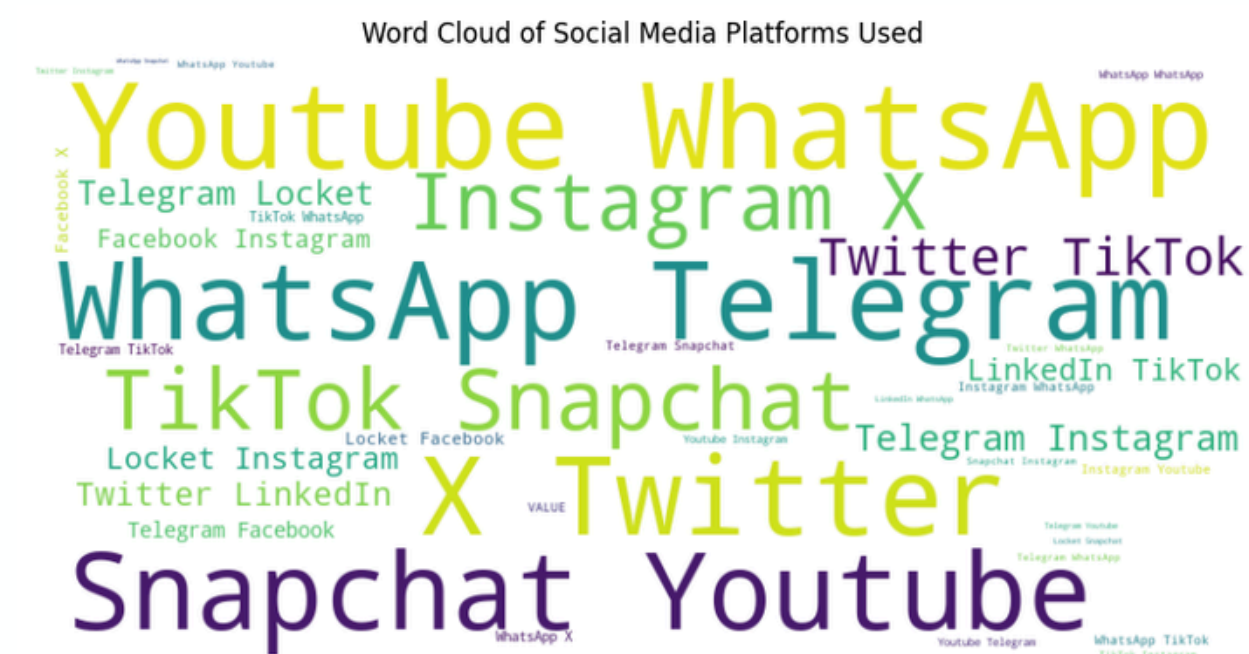
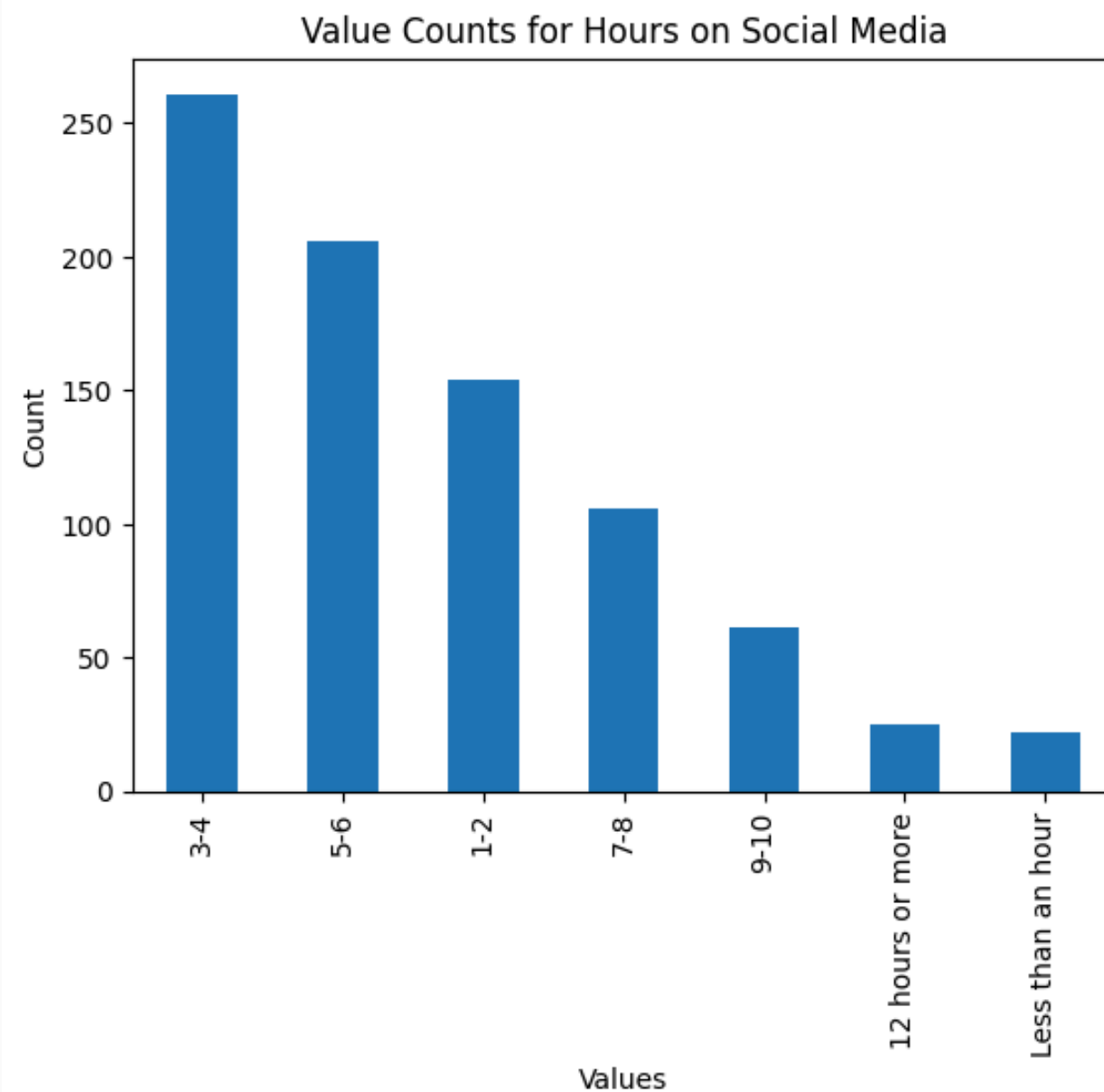
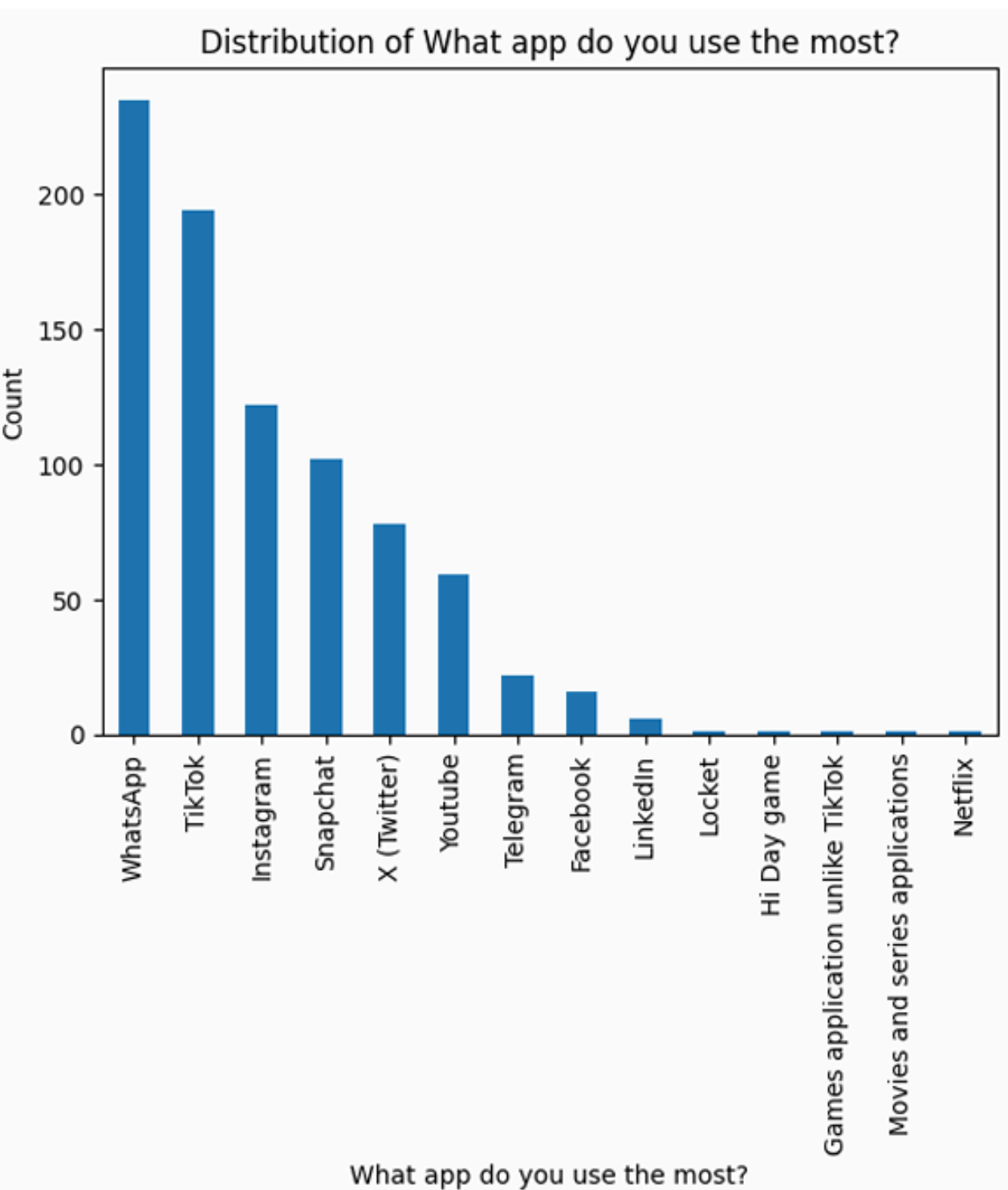
Value Counts for Area:



Distribution of Current educational level:

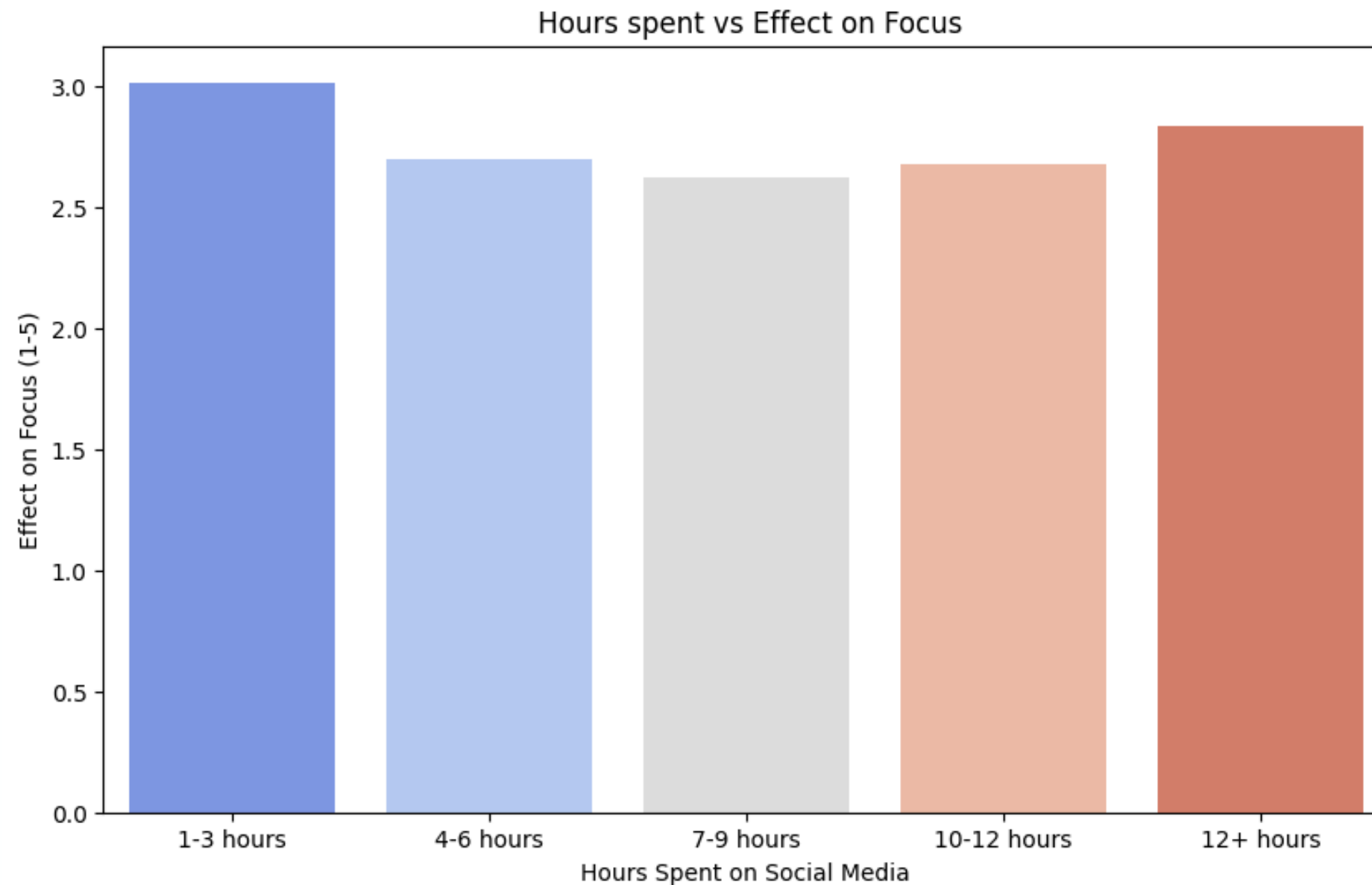


# Key Findings for Primary Data



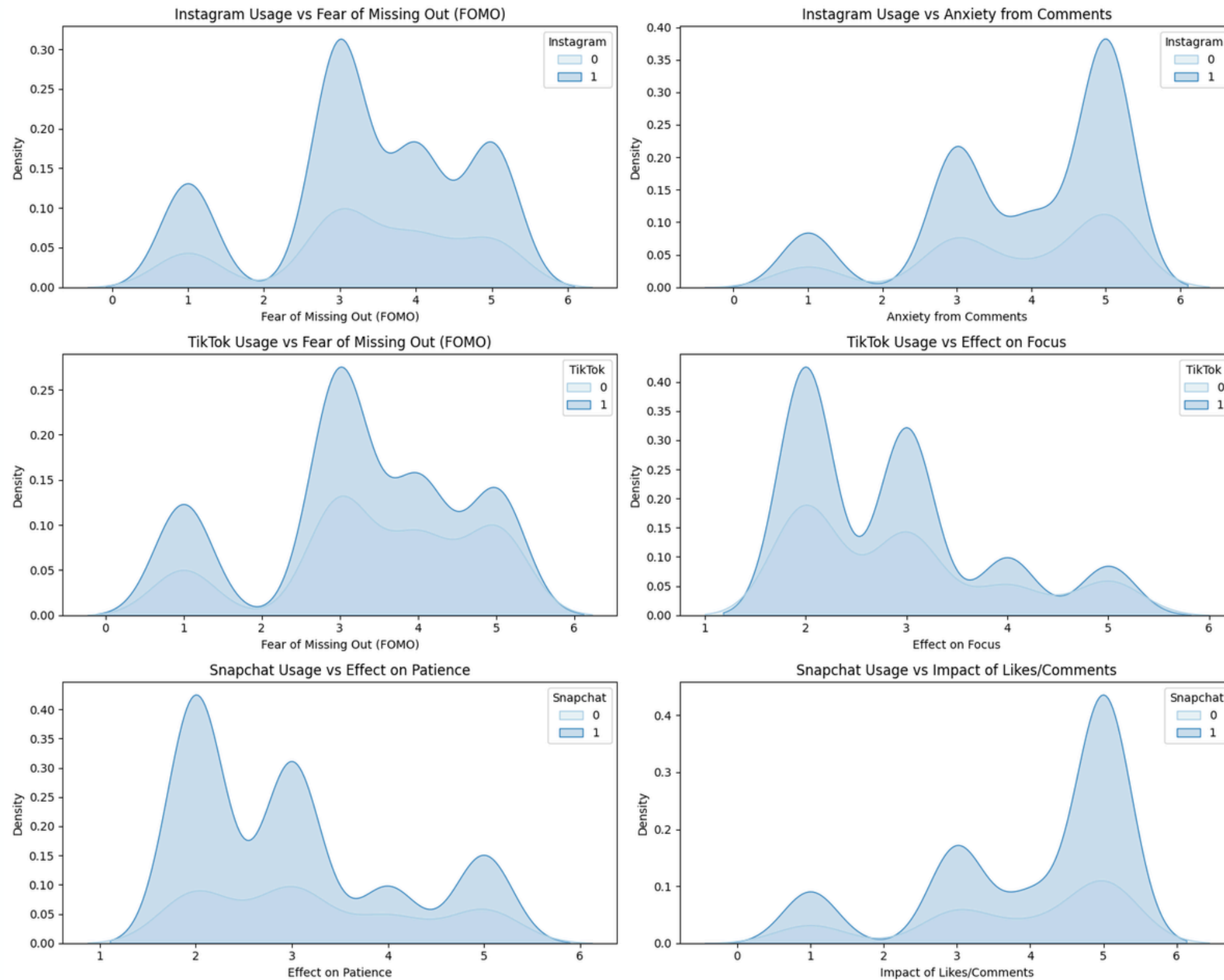


# Data Visualization for Primary Data



**(1)**  
**number of**  
**hours spend**  
**on social**  
**media**  
**&**  
**how it**  
**affects their**  
**ability to**  
**focus.**

# Data Visualization for Primary Data

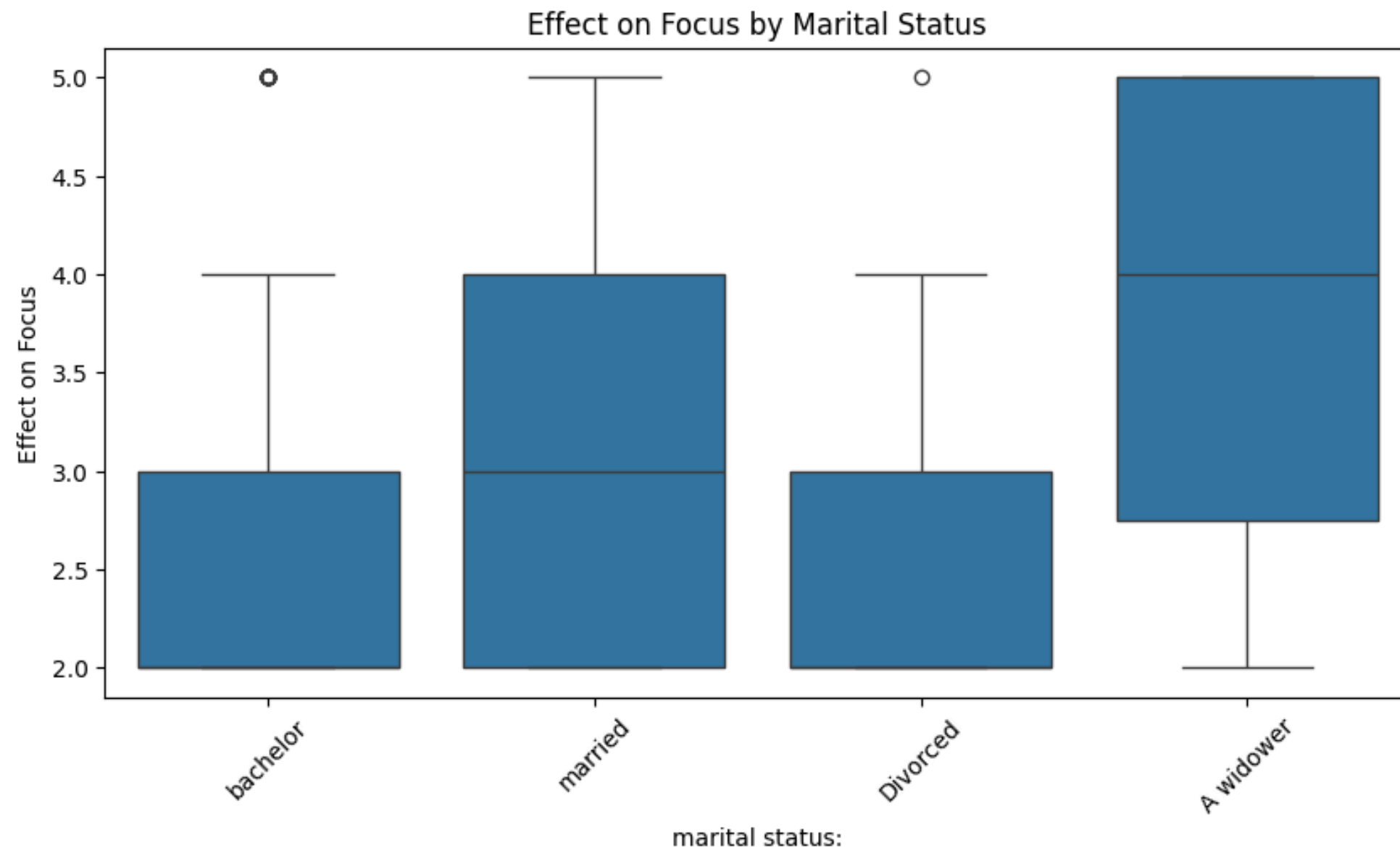


**(2)**  
**Platforms**  
**usage**  
**&**  
**it effects**



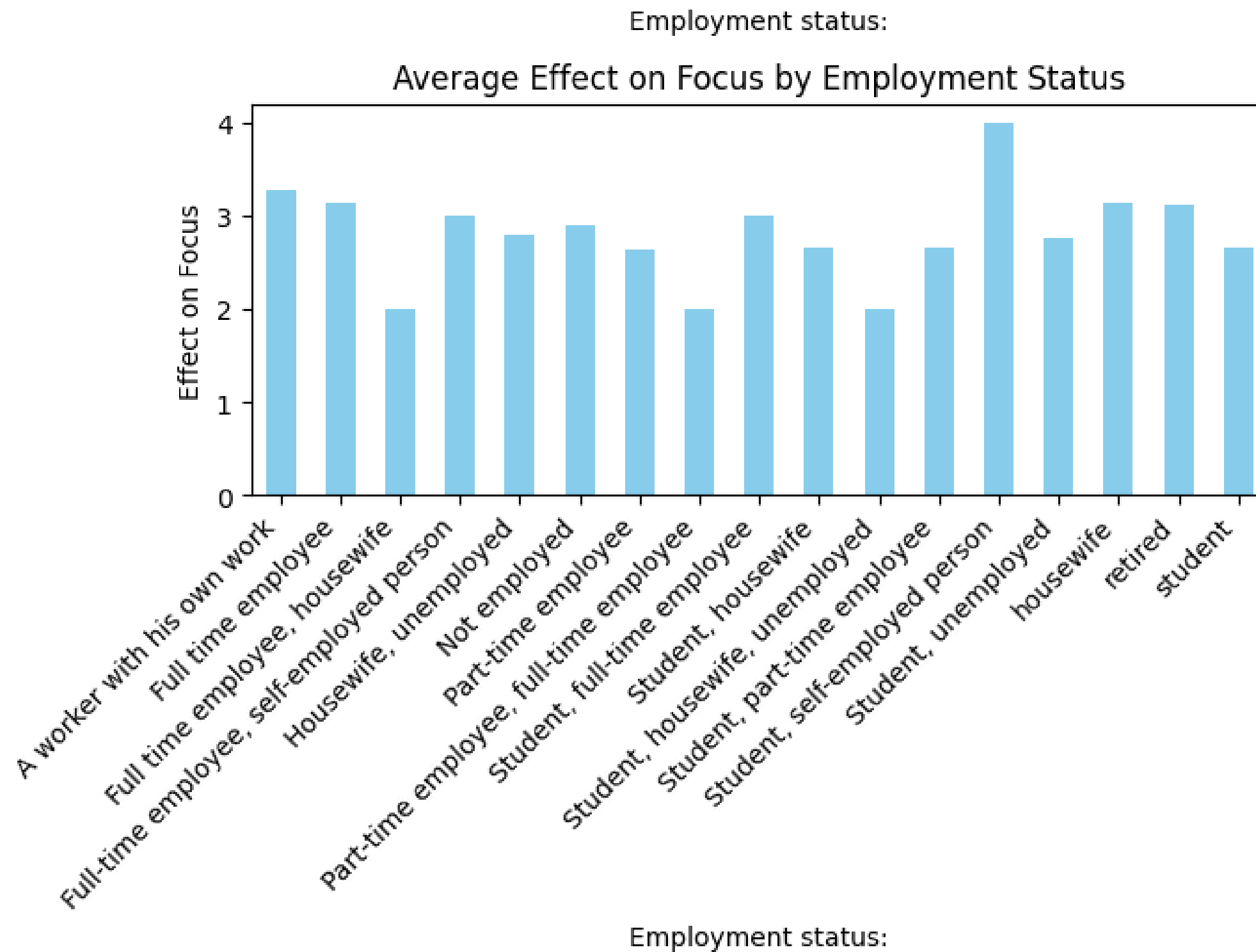


# Data Visualization for Primary Data



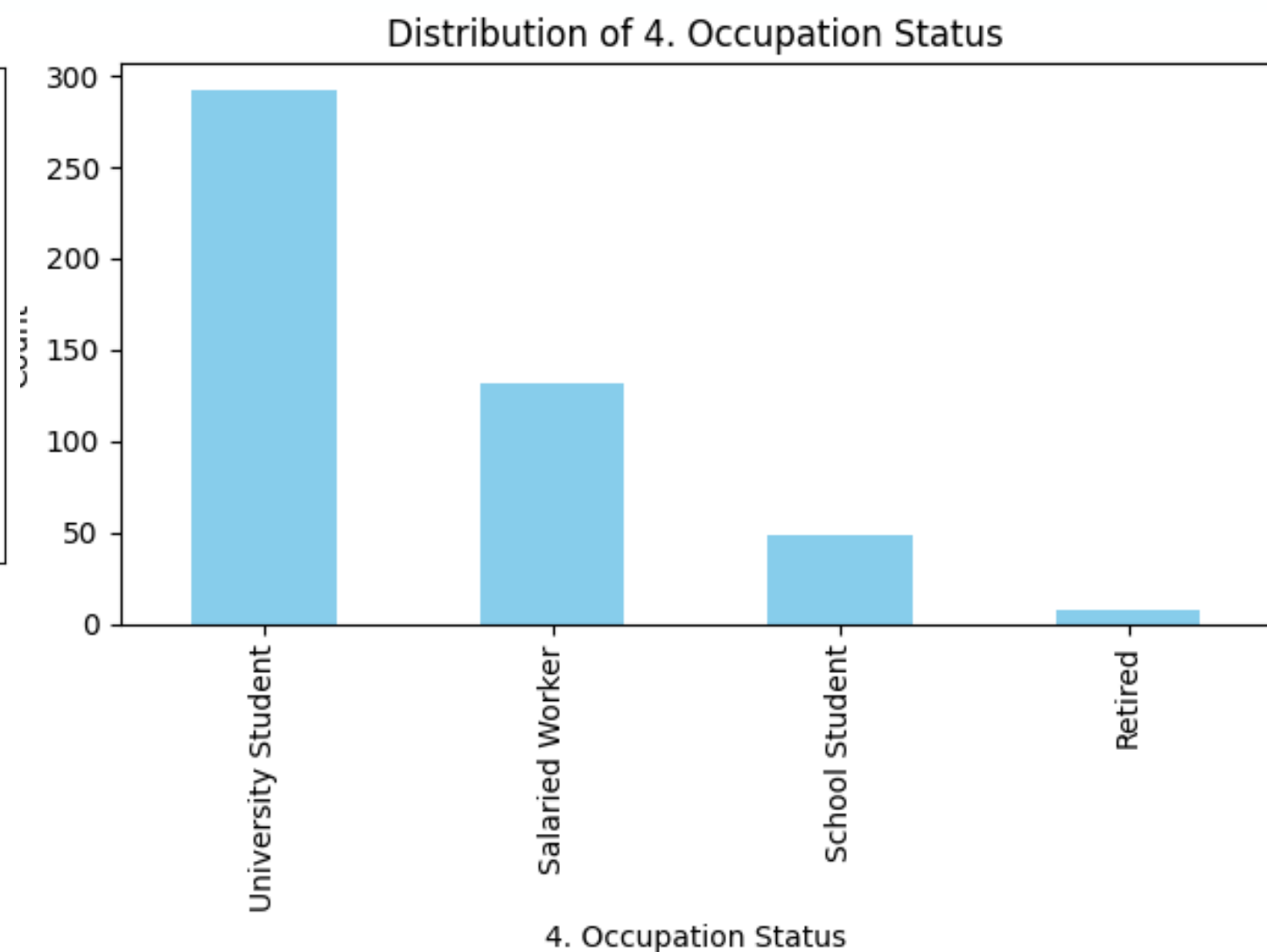
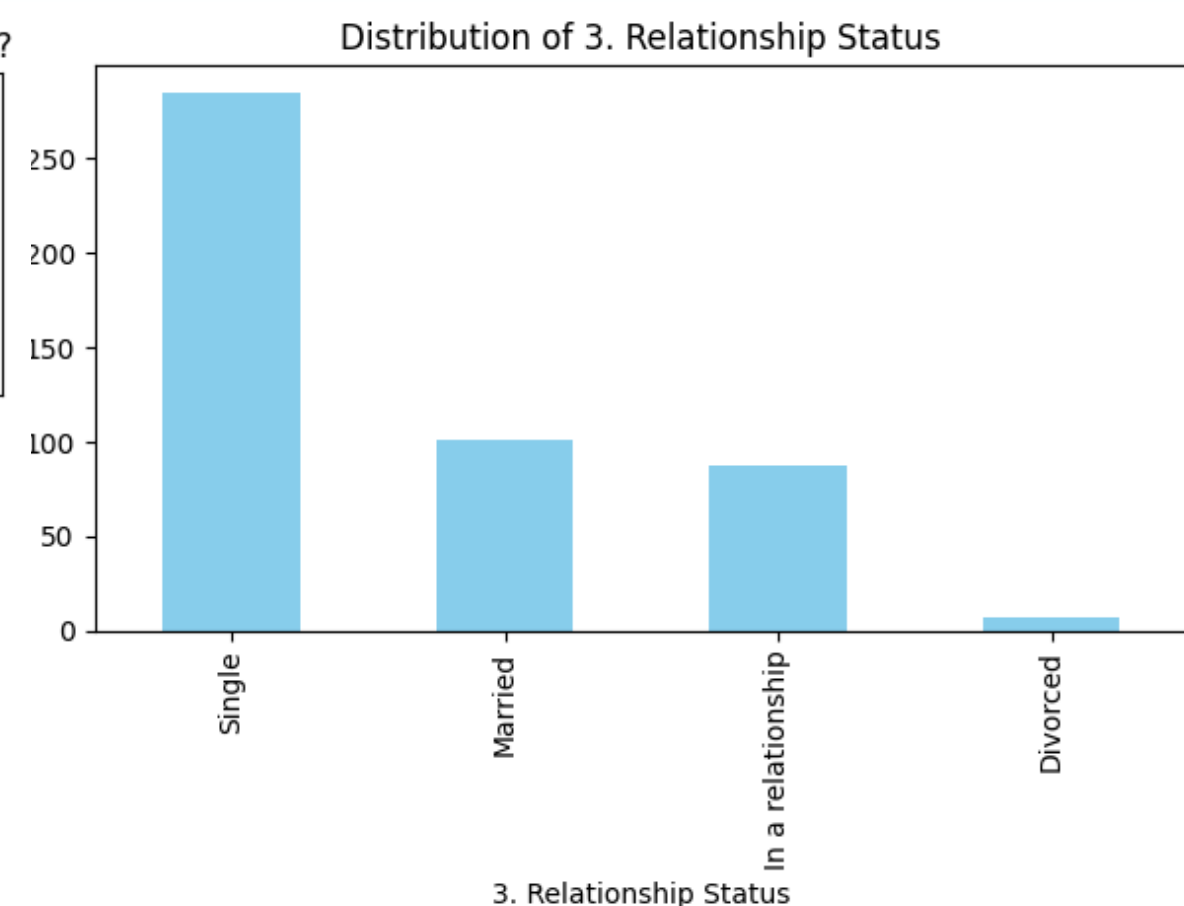
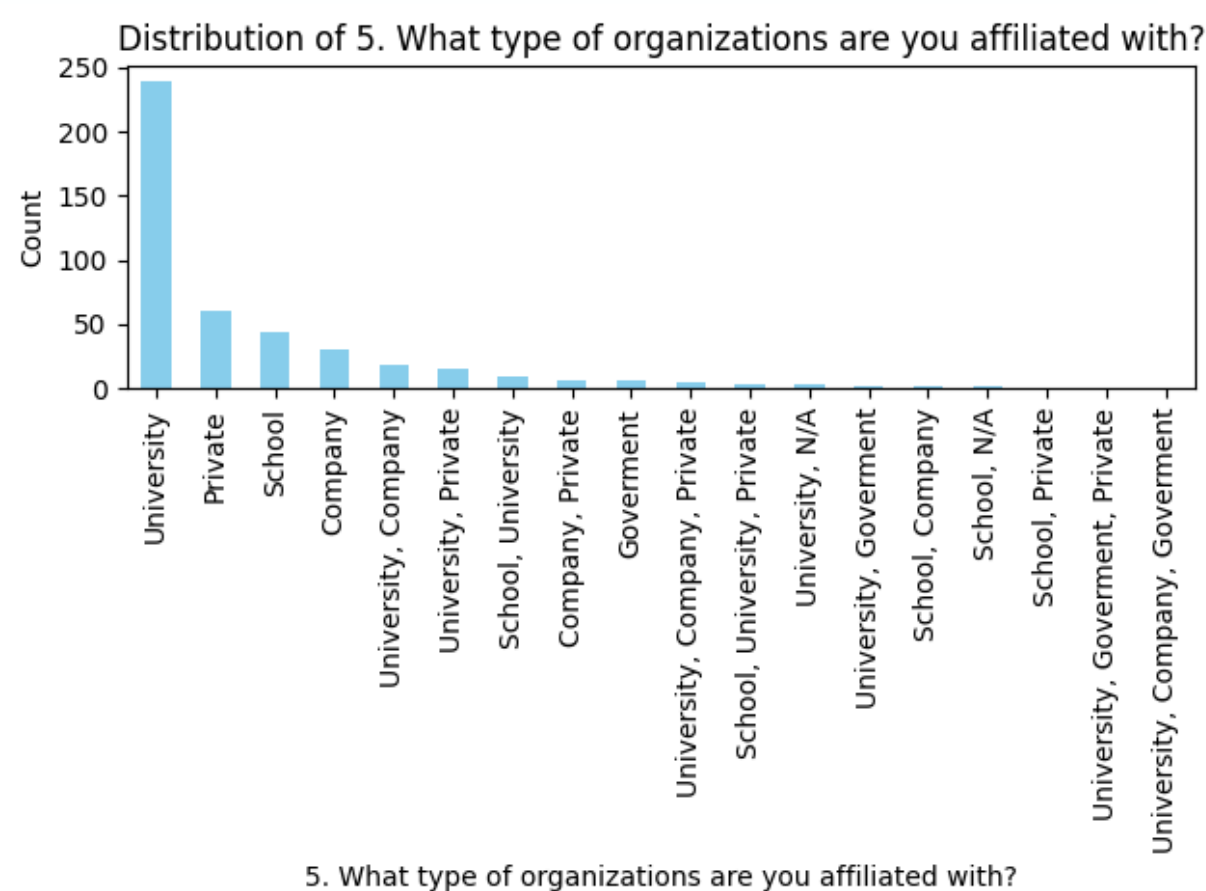
**(3)  
marital  
status  
&  
their  
perception  
of how  
social media  
affects their  
focus.**

# Data Visualization for Primary Data

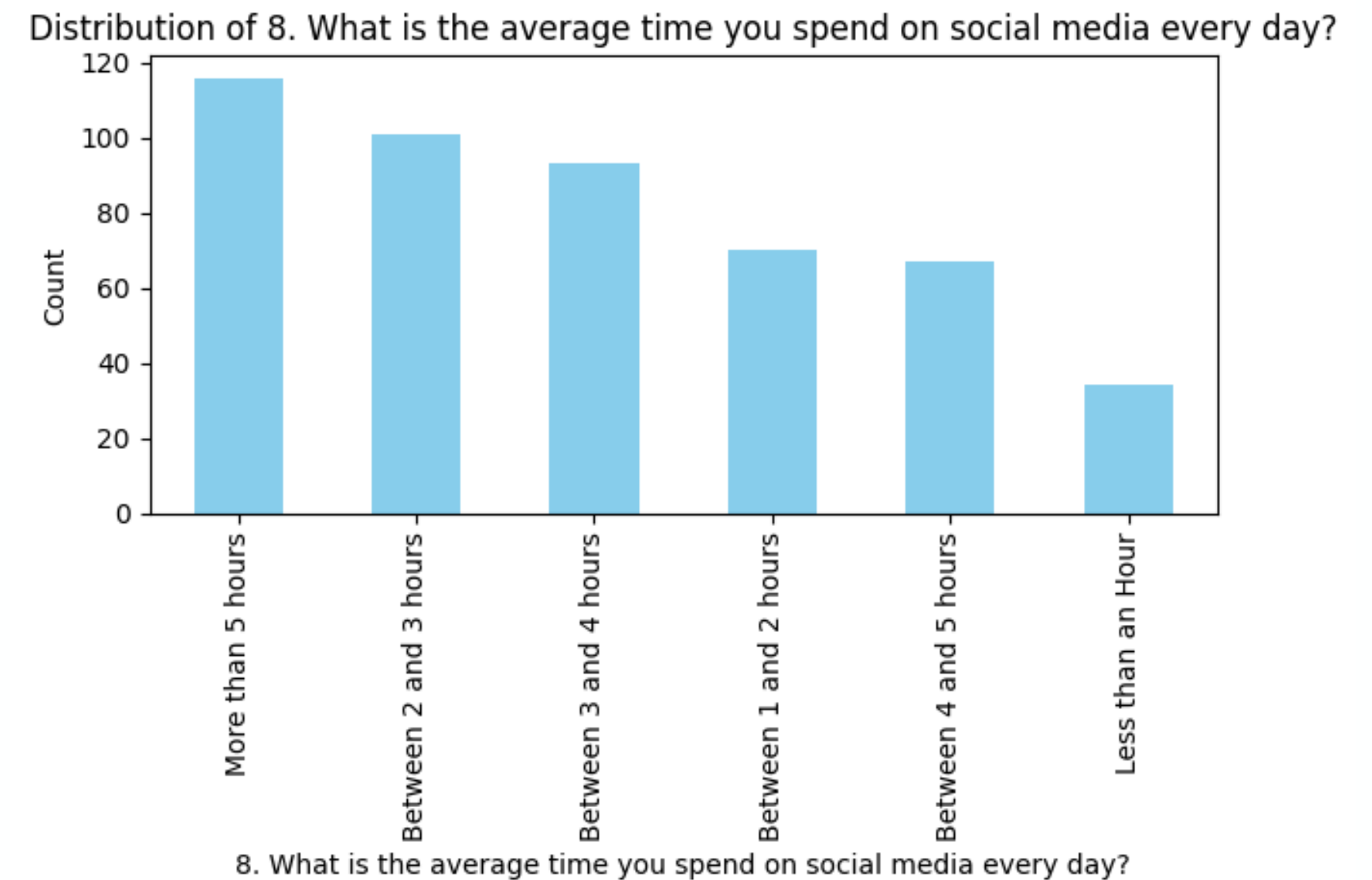
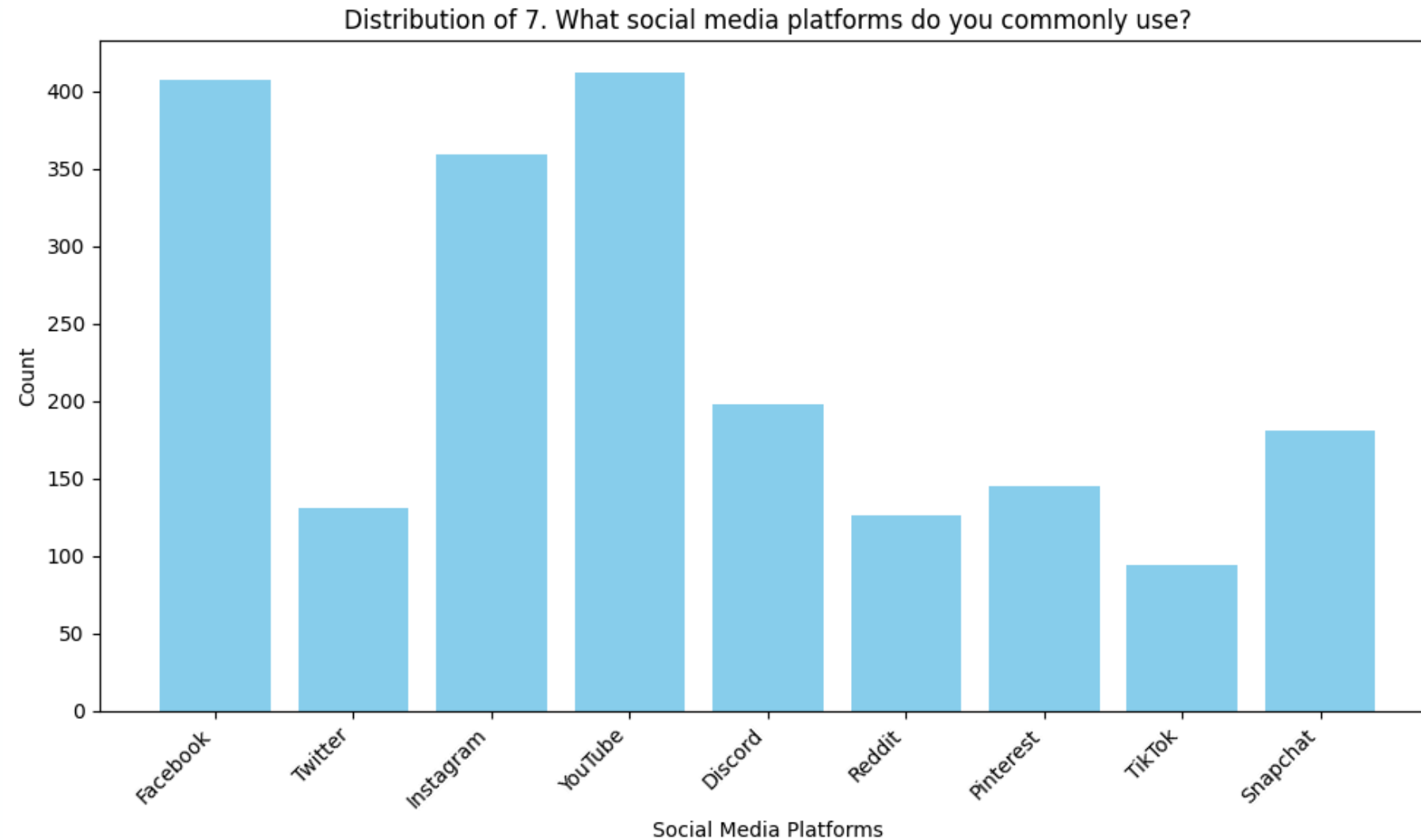


**(4)**  
**Employment  
status  
&  
their  
perception  
of how  
social media  
affects their  
focus.**

# Key Findings for Secondary Data

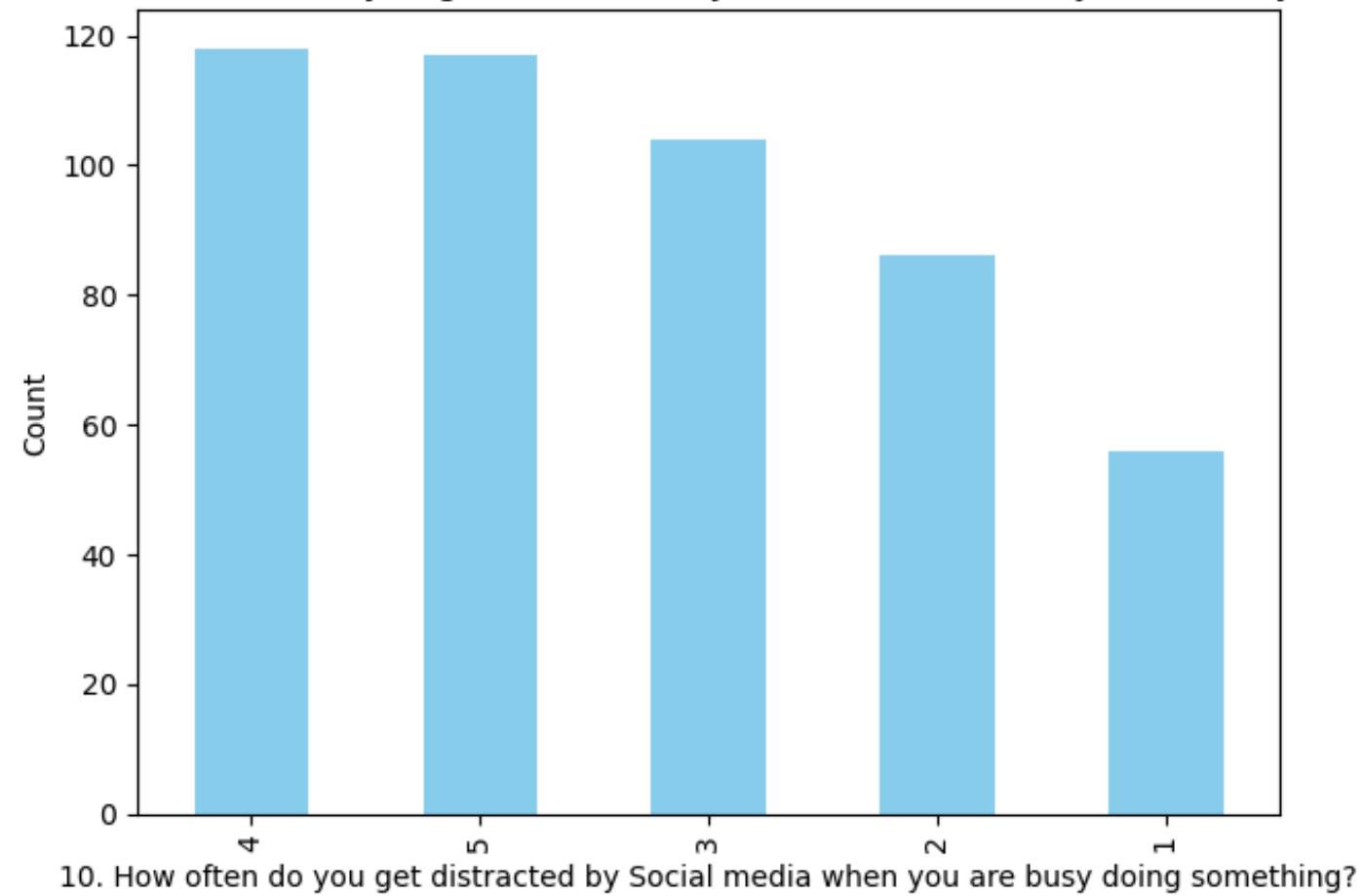


# Key Findings for Secondary Data

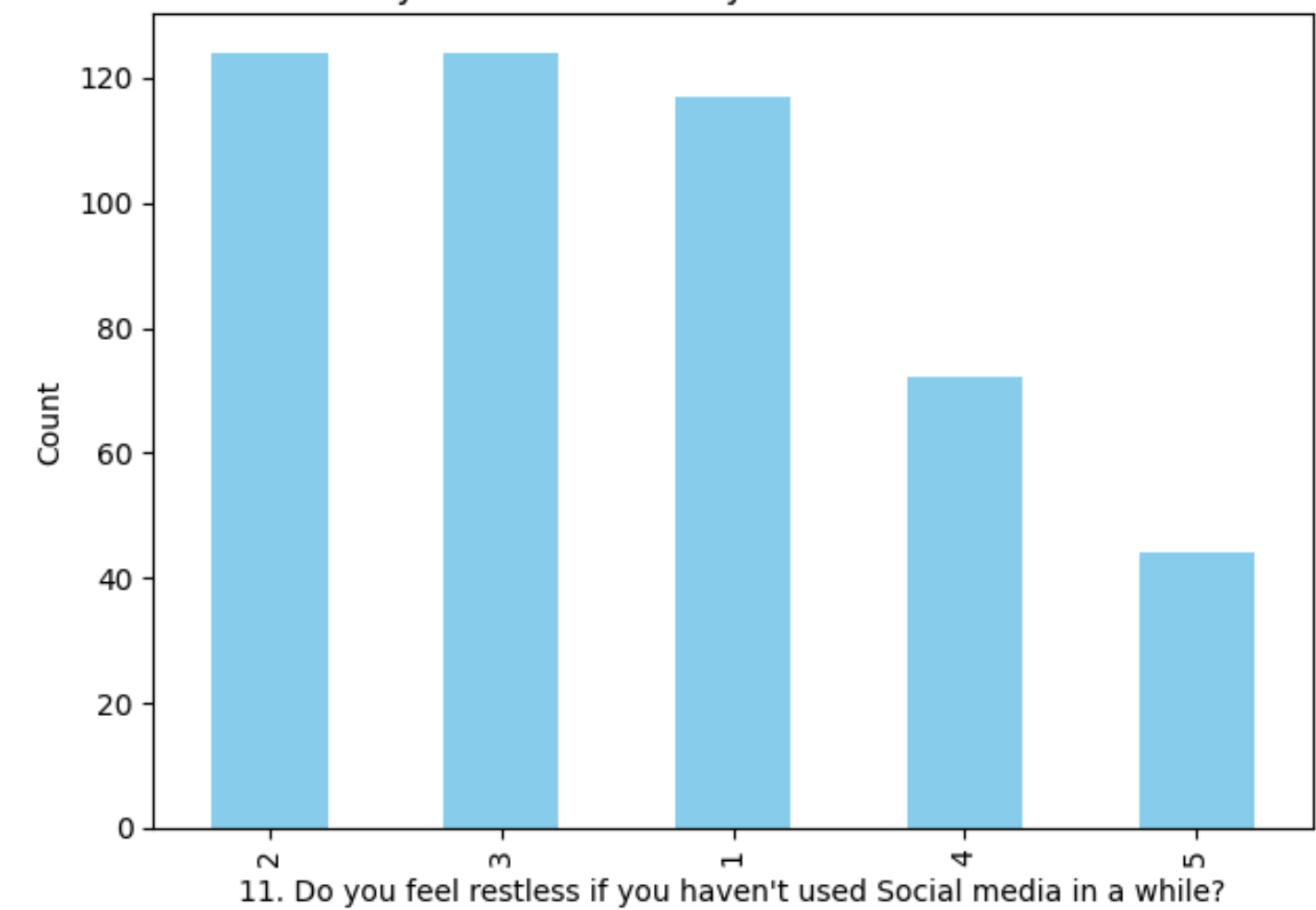


# Data Visualization for Secondary Data

Distribution of 10. How often do you get distracted by Social media when you are busy doing something?

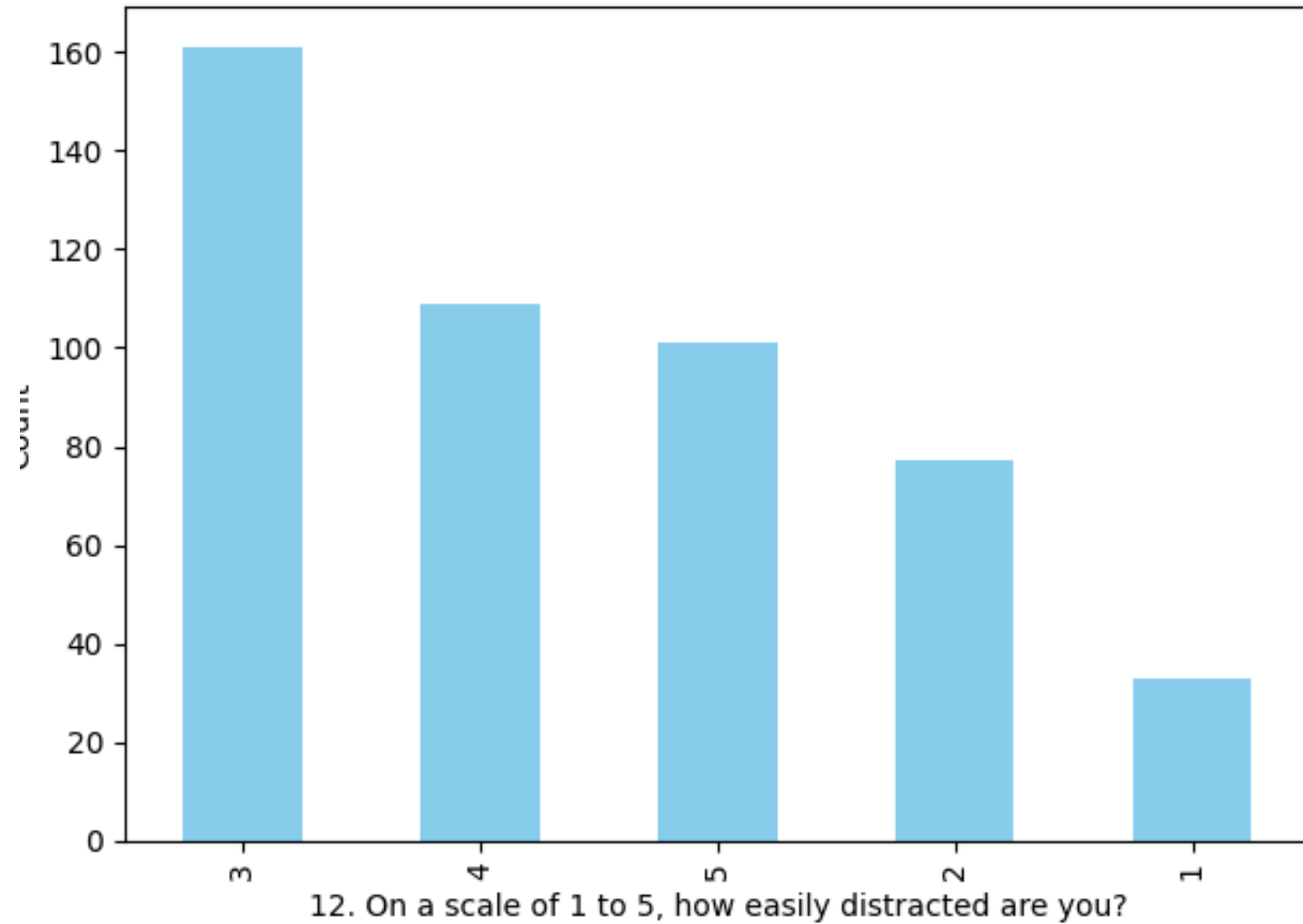


Distribution of 11. Do you feel restless if you haven't used Social media in a while?

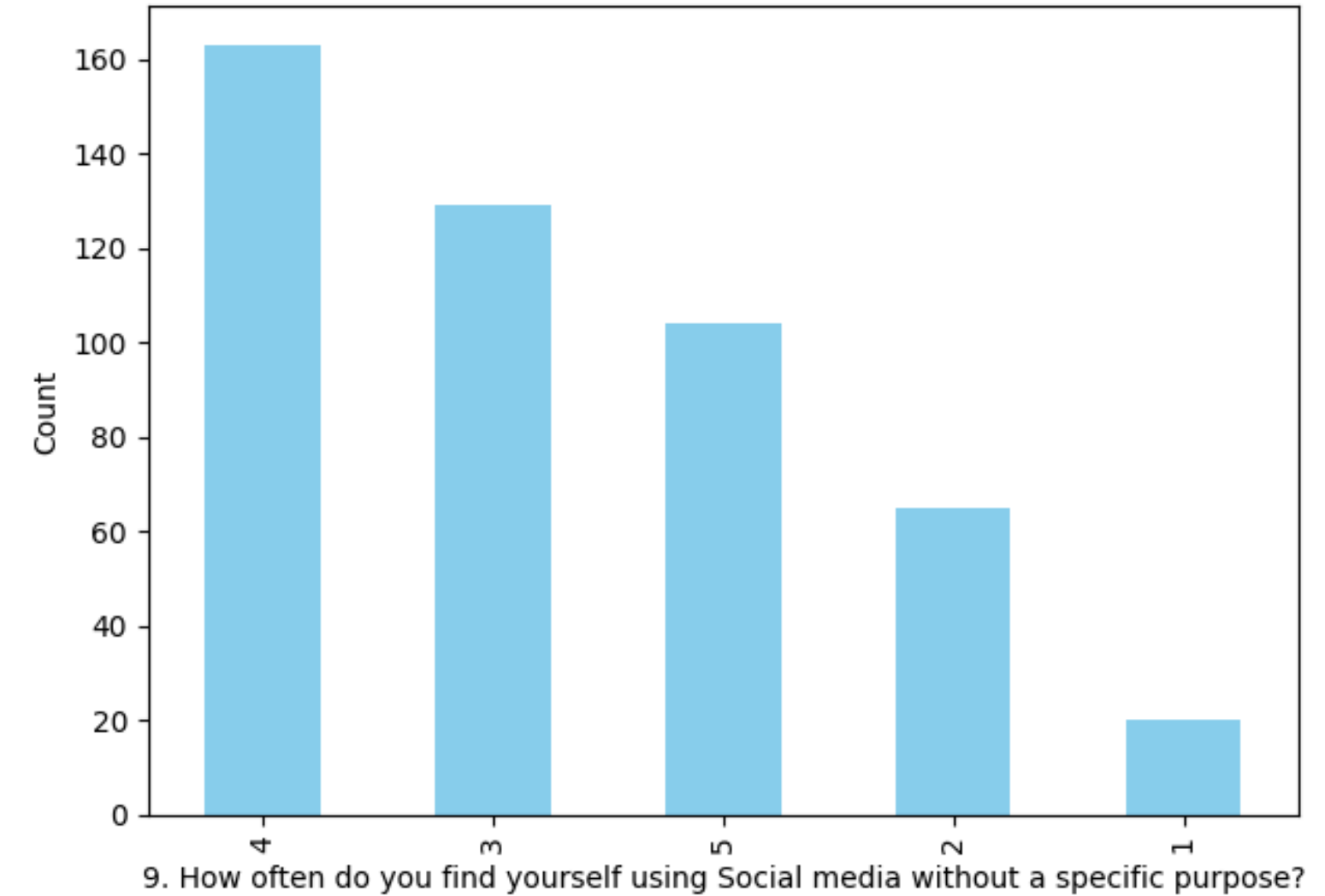


# Data Visualization for Secondary Data

Distribution of 12. On a scale of 1 to 5, how easily distracted are you?



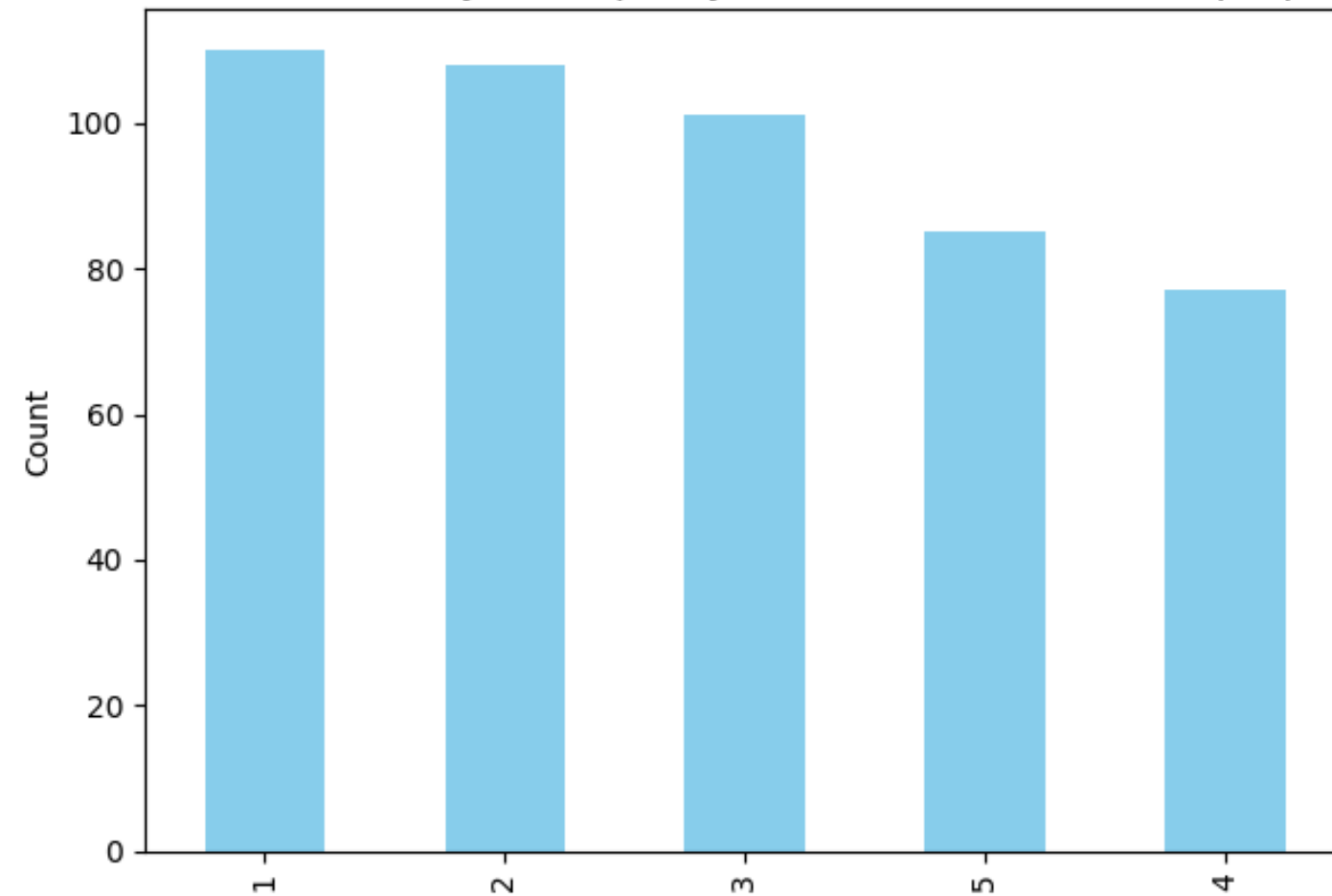
Distribution of 9. How often do you find yourself using Social media without a specific purpose?





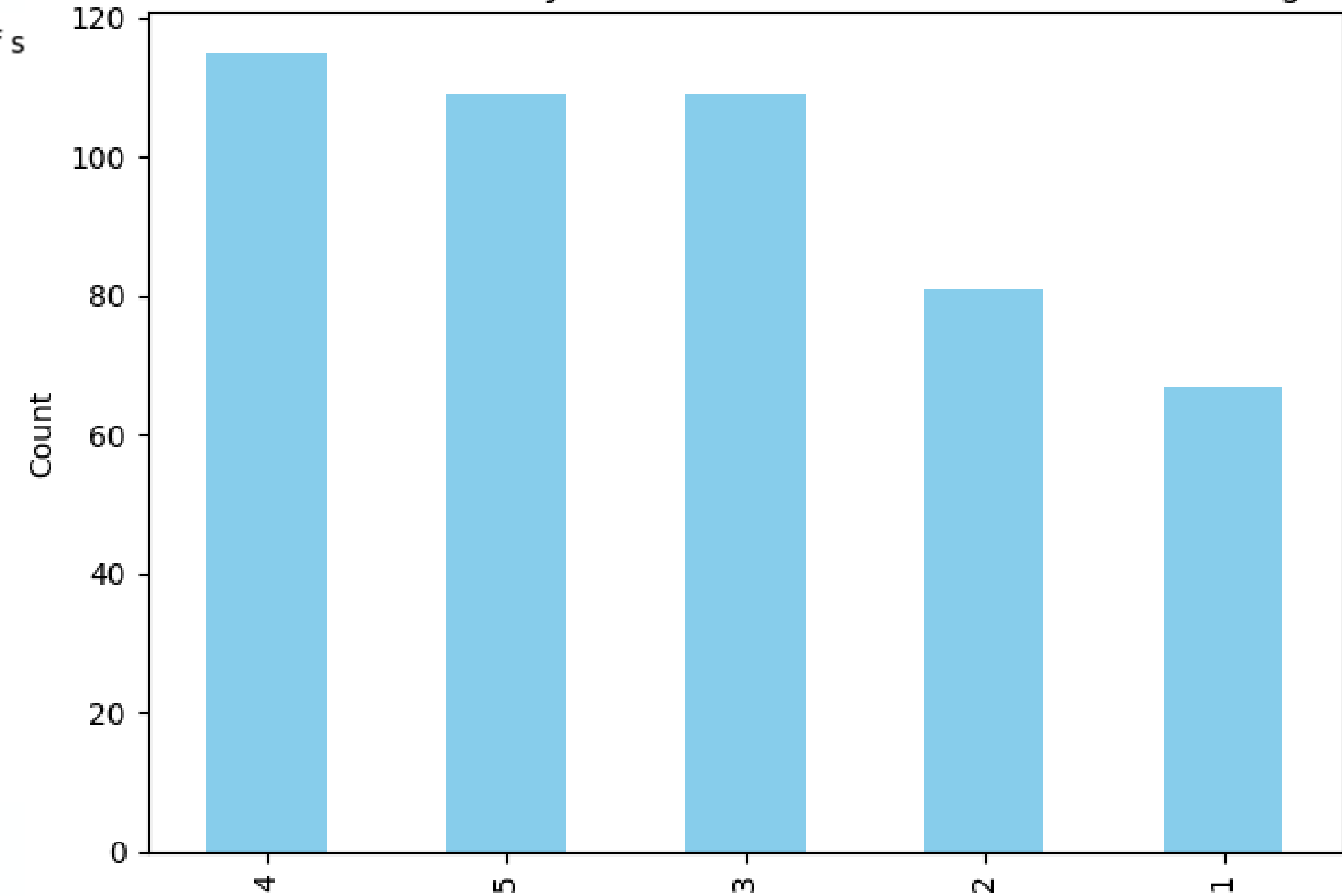
# Data Visualization for Secondary Data

of 15. On a scale of 1-5, how often do you compare yourself to other successful people through the use of s



15. On a scale of 1-5, how often do you compare yourself to other successful people through the use of social media?

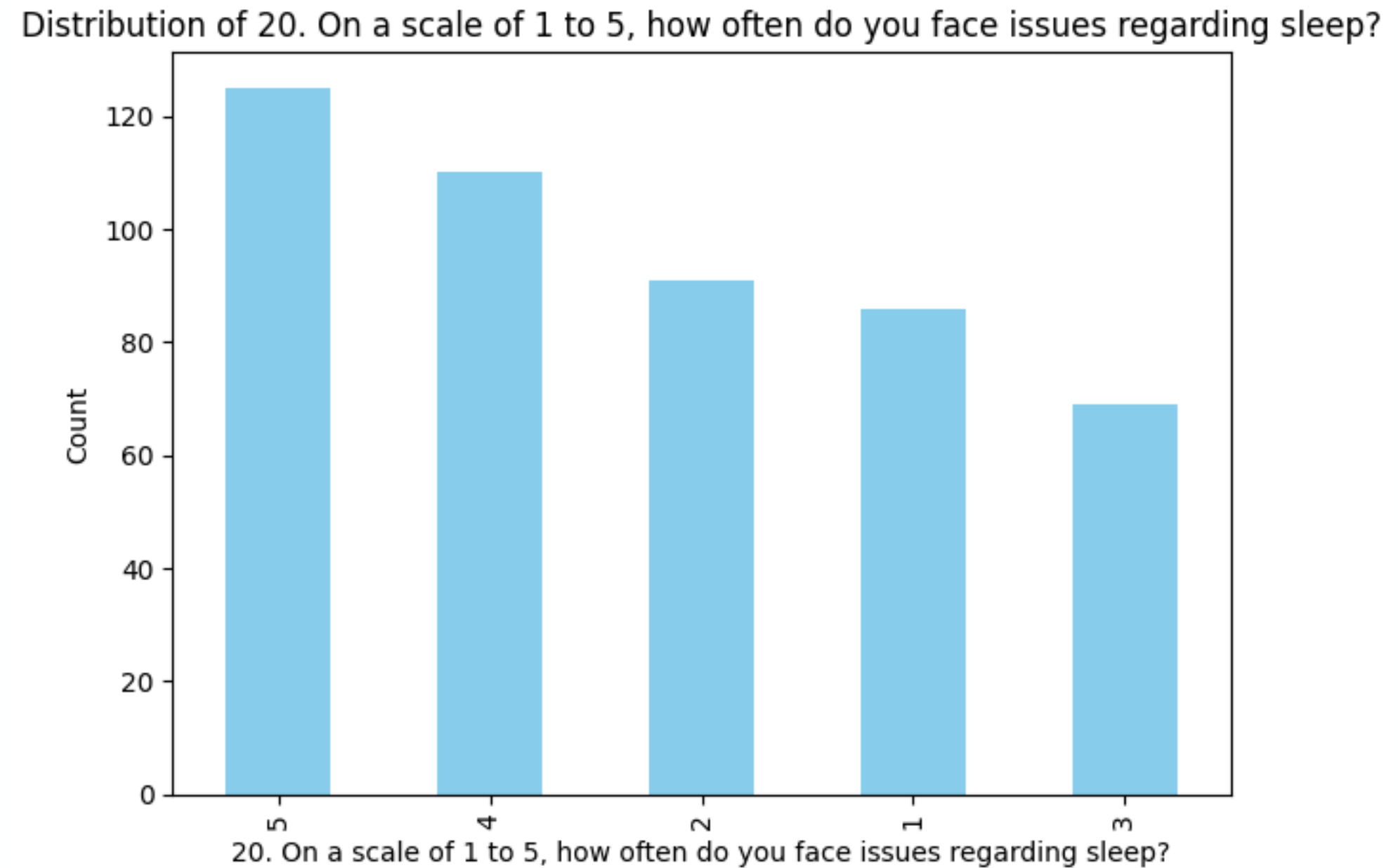
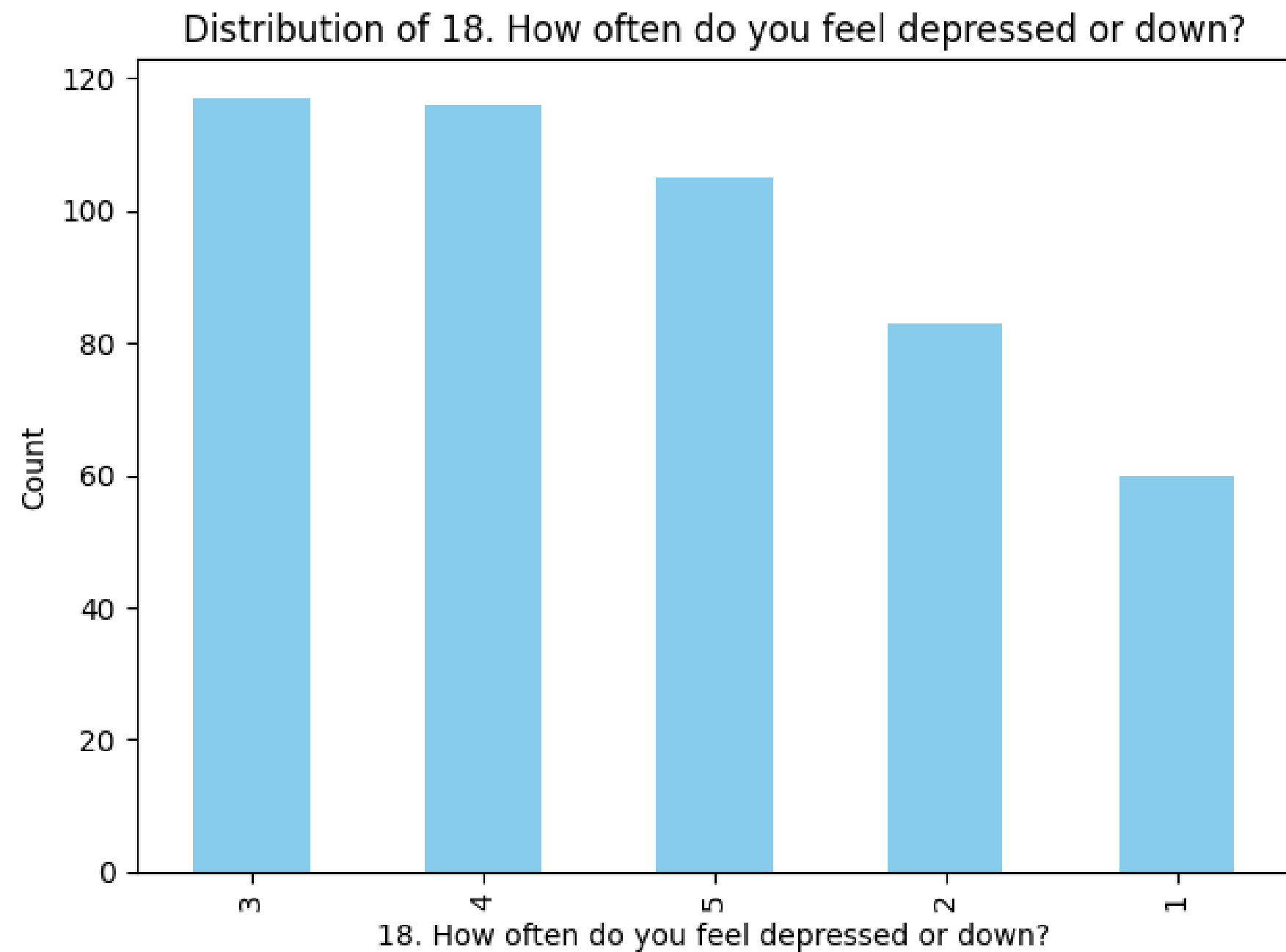
Distribution of 14. Do you find it difficult to concentrate on things?



14. Do you find it difficult to concentrate on things?



# Data Visualization for Secondary Data

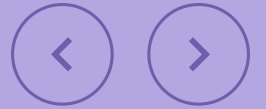


# Model Performance and Predictions

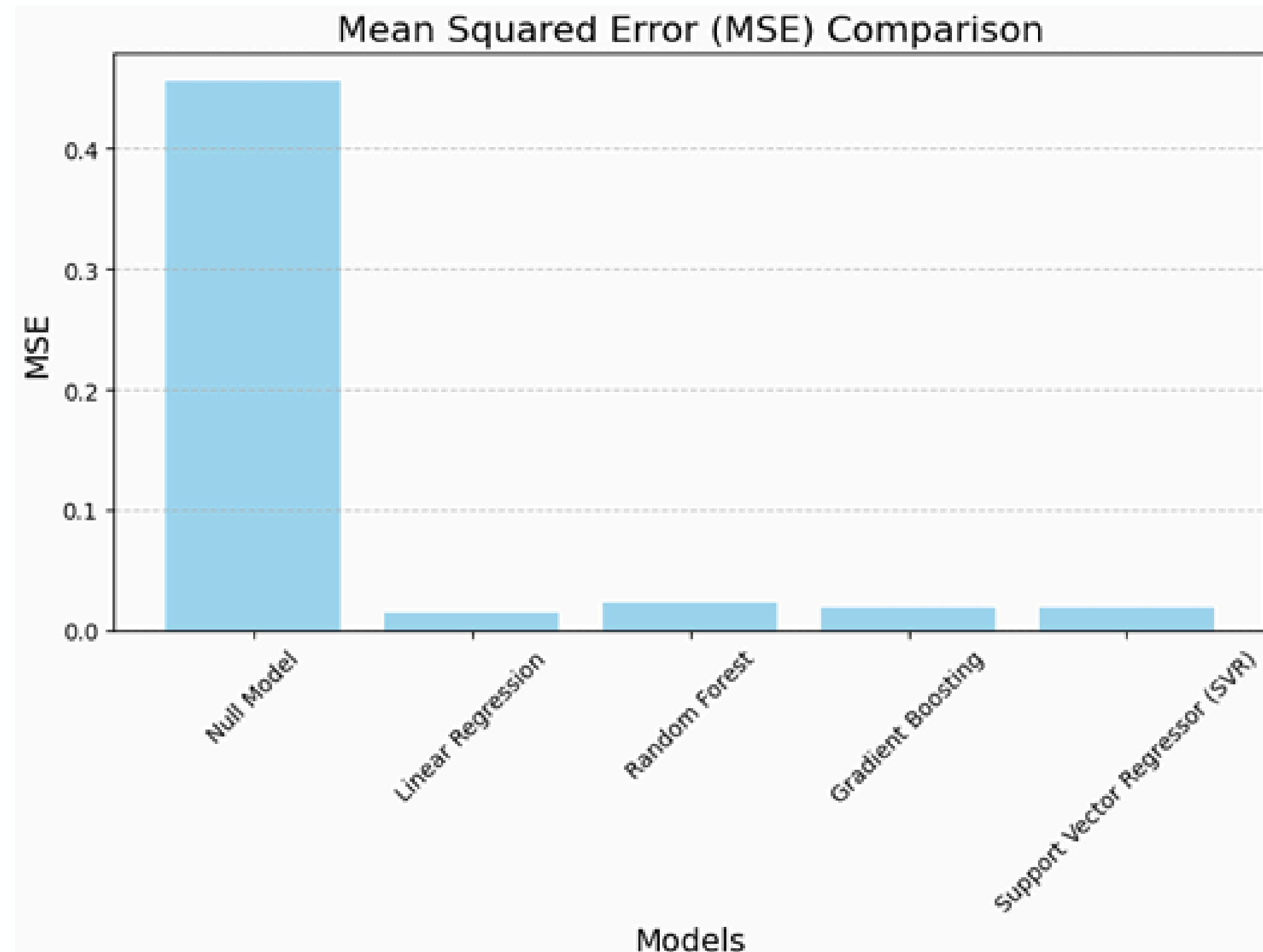
As we mentioned the following models were evaluated (70% training, 30% testing):

1. Linear Regression (Baseline Model)
2. Random Forest Regressor
3. Gradient Boosting Regressor
4. Support Vector Regressor (SVR)
5. K-Nearest Neighbors (KNN)

# Performance Visualization for Primary Data



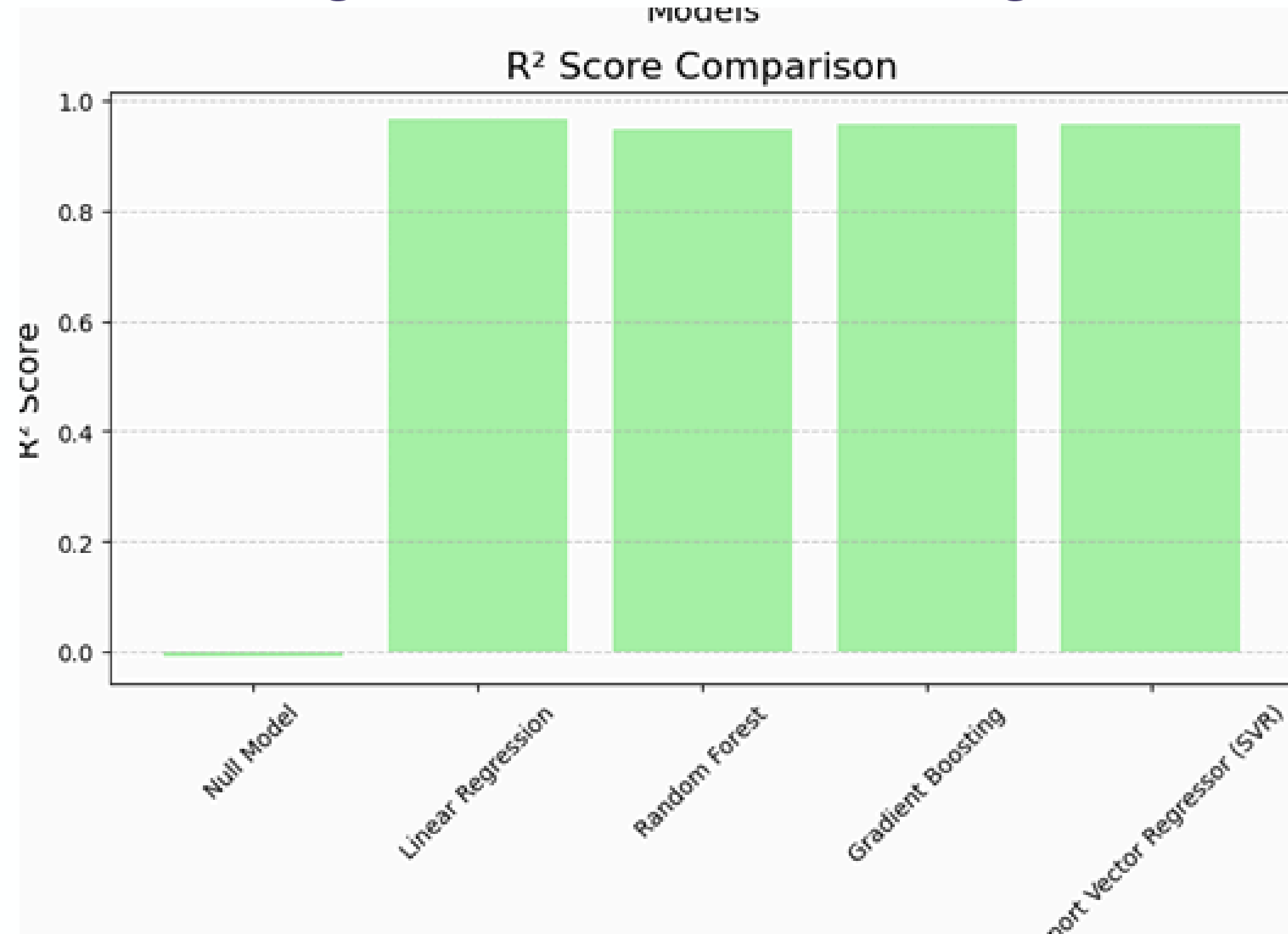
**Linear Regression had a slightly lower MSE**



# Performance Visualization for Primary Data



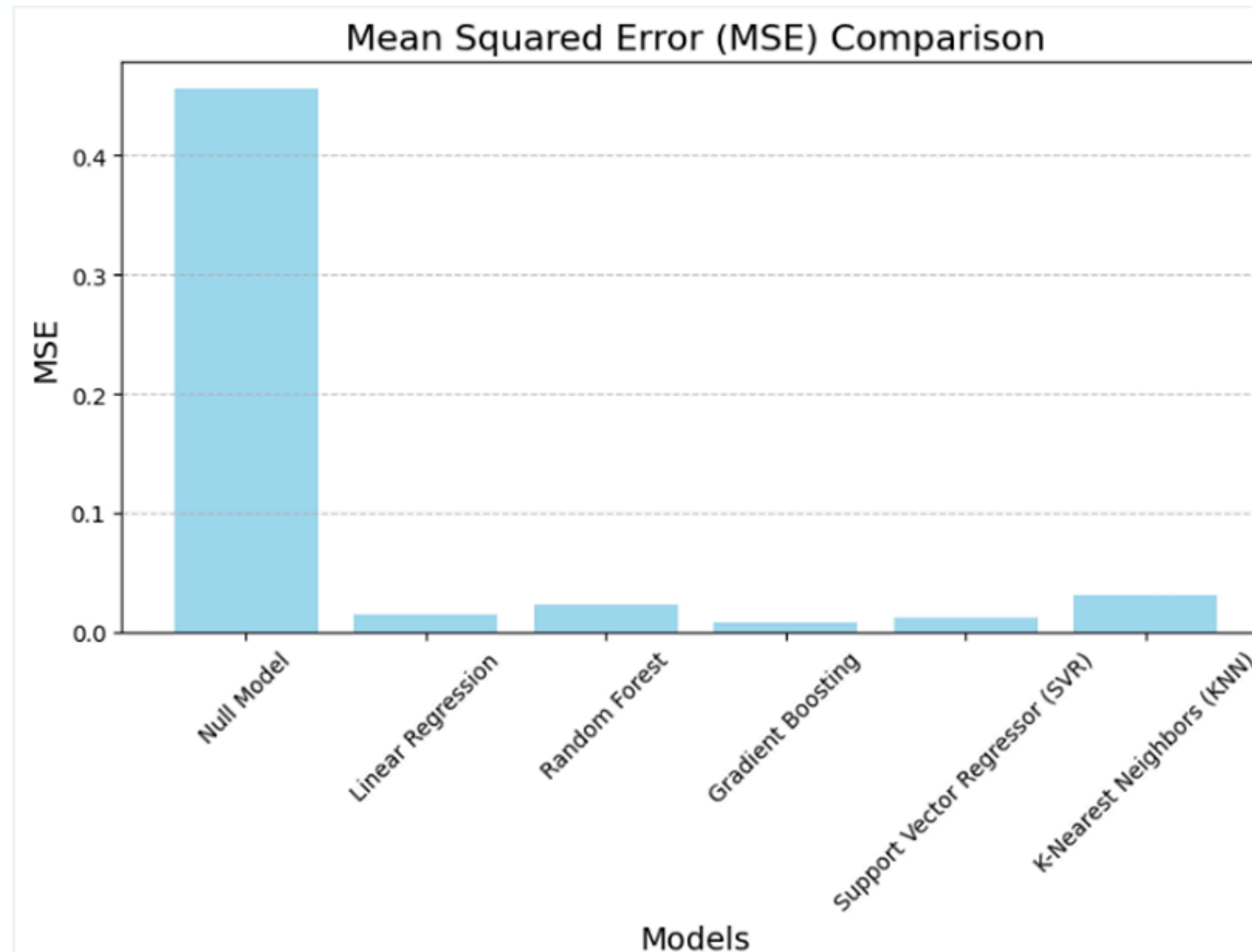
Linear Regression achieved the highest  $R^2$  score



# Performance Visualization for Secondary Data



**Gradient Boosting achieves the lowest MSE, indicating the best accuracy.**

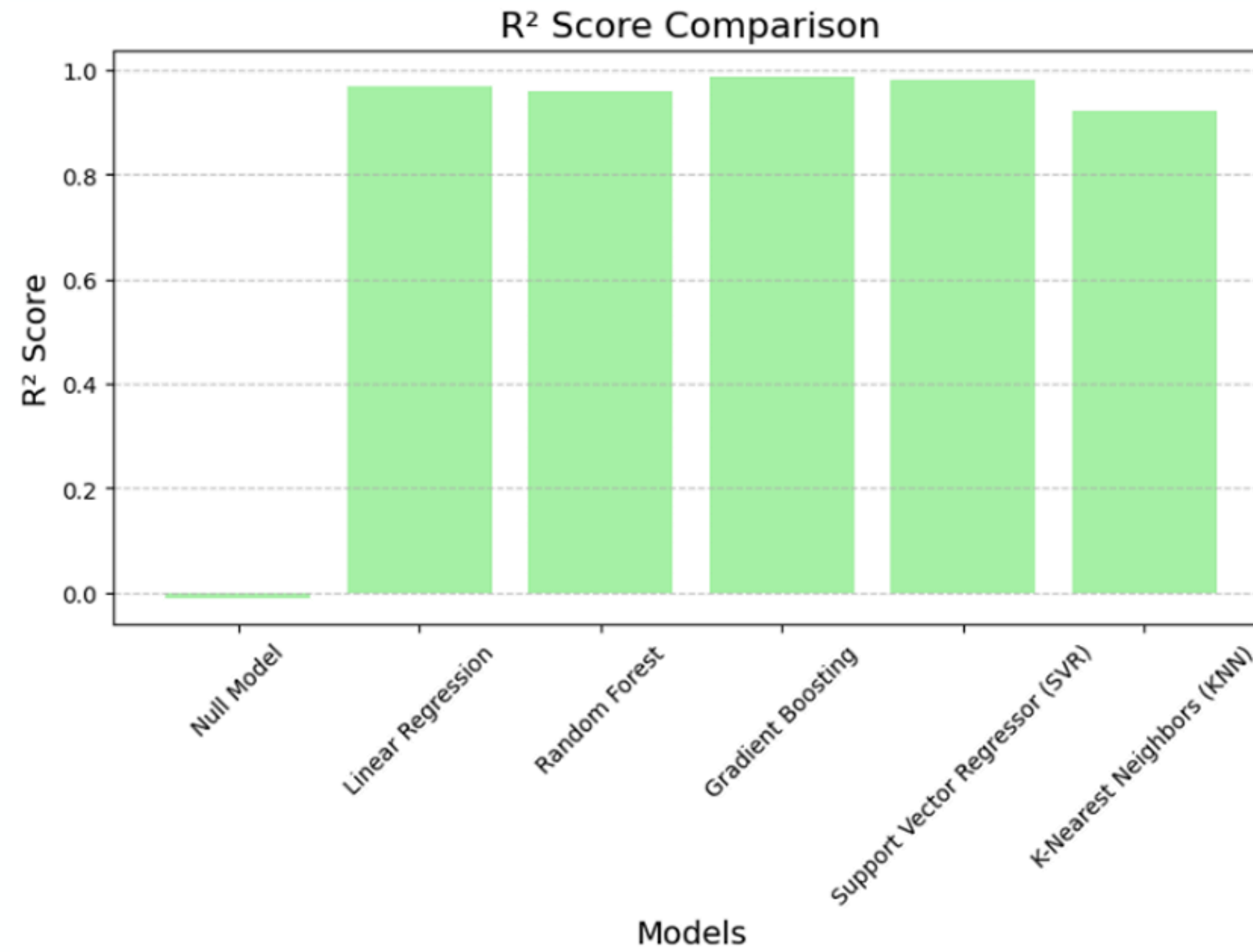




# Performance Visualization for Secondary Data



**Gradient Boosting achieves the highest  $R^2$ .**



**Best performer with the highest accuracy for MHI prediction.**

**Primary Data :**  
**Linear Regression**

**Secondary Data :**  
**Gradient Boosting**

## **Recommendations for primary Data :**

- **Improvements can be made by exploring additional data sources**

## **Recommendations for Secondary Data :**

- **Expand Data Features: Incorporate additional behavioral or demographic variables to better capture data patterns.**

# Challenges and Solutions For **Primary**

## **Challenge 1: Survey Design**

To address the challenge of creating precise and reliable questions for measuring mental health aspects (e.g., Self-Esteem, Social Anxiety, Insomnia, FOMO, and Attention Span), we consulted mental health experts to validate and refine the survey structure and content.

## **Challenge 2: Arabic Survey and Translation**

After translating responses from Arabic to English, inconsistencies and errors arose. We resolved this by cleaning and processing the data to ensure accuracy and consistency across responses.

# Challenges and Solutions For **Primary**

## **Challenge 3: Data Collection**

To gather a diverse and representative sample, we distributed the survey widely across social media platforms and encouraged participants to share it further.

## **Challenge 4: Arabic Survey and Translation**

Analyzing varied textual responses was simplified by categorizing them into key themes and assessing emotional tones (positive, negative, or neutral) to derive meaningful insights.



# Challenges and Solutions For **Primary** and **Secondary**

## **Challenge 5: Categorical Variable Encoding**

To transform categorical data (e.g., age, regions, favorite apps) into numerical formats, we converted categories into numerical values while avoiding overlapping relationships for model compatibility.

## **Challenge 6: Calculating the Mental Health Index (HMI)**

We unified multiple dimensions of mental health into a single index by assigning weighted importance to each dimension based on expert guidance and standardizing the data for consistency.

# Challenges and Solutions For **Primary** and **Secondary**

## **Challenge 7: Improving Model Performance**

Weak initial model performance was addressed by refining the data, focusing on the most relevant features, and improving overall data quality to enhance accuracy and reliability.

# Conclusion from Primary and Secondary Data



- **PRIMARY DATA  
(SAUDI ARABIA):**

Social media usage has a measurable impact on mental health, with key factors like Self-Esteem, Social Anxiety, Insomnia, and FOMO being significant predictors of the Mental Health Index (MHI).

- **SECONDARY DATA  
(GLOBAL CONTEXT):**

Analysis reinforced findings from primary data, confirming universal patterns in how social media affects mental health across different demographics.

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**Thank You.**