

# Social Media and Mental Health

Exploring the Link Between Social Media Usage and Mental Health Challenges  
Among University Students

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# Introduction

Social media plays a major role in young people's lives, impacting self-perception, relationships, and mental health. Studies show that overuse can increase risks of anxiety, depression, sleep disturbances, and cyberbullying, with 59% of U.S. teens experiencing online harassment. This research investigates how social media usage has affected mental health indicators like anxiety, depression, and sleep among university students from 2020 to 2024, exploring trends in online discussions to reveal these evolving effects.

# Dataset

## **Dataset 1: Social Media and Mental Health**

This dataset examines the impact of Facebook use on mental health among U.S. participants, including data on depression (PHQ-9), anxiety (GAD-7), social media usage patterns, and demographics, allowing for analysis of correlations between social media and mental health outcomes.

**Downloaded on:** 14 October 2024

## **Dataset 2: Reddit Mental Health Dataset**

This dataset includes posts from mental health-focused subreddits, analyzed for sentiment using VADER. It provides insights into public sentiment and prevalent themes in mental health discussions within online communities, especially among students.

**Downloaded on:** 13 October 2024

# Dataset

## Dataset 3: Social Media and Mental Health (smmh)

**Description** : This dataset was collected to explore the potential correlation between the amount of time an individual spends on social media and its impact on mental health. The data was gathered through a survey, aiming to analyze mental health symptoms potentially linked to social media use and predict whether an individual should consider professional help.

**Downloaded on:** 14 October 2024

**Data Access:**

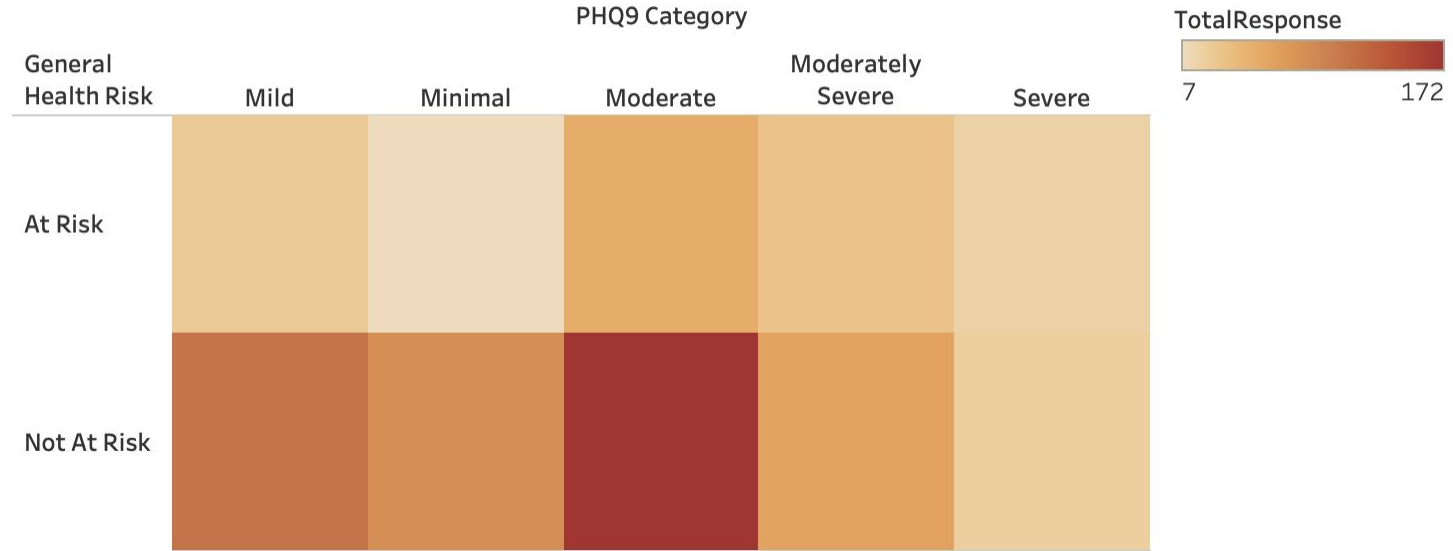
<https://www.kaggle.com/datasets/souvikahmed071/social-media-and-mental-health>

# Research Question

How have social media usage patterns impacted mental health indicators (e.g., depression, anxiety, sleep disturbances) among university students from 2020 to 2024, and what evolving trends in social media discussions reflect these effects?

# **Analysis on Dataset 1**

## Distribution of Depression Severity Across General Health Risk Categories



This heatmap shows the distribution of depression severity across different general health risk categories, with color intensity indicating respondent count.

Notably, moderate depression is common even among "Not At Risk" individuals, highlighting that mental health support may be needed for all, regardless of physical health status.

### Follow-Up Question:

What factors might contribute to the high number of individuals in the "Not At Risk - Moderate" category? Are there common lifestyle factors or stressors influencing this group?

Gender Ratios in Anxiety Levels (GAD7 Category) Across Health Risk Categories



This bubble chart shows male-to-female ratios across anxiety levels for respondents categorized as "At Risk" or "Not At Risk" in general health. Larger bubbles indicate higher male representation, while smaller bubbles indicate higher female representation.

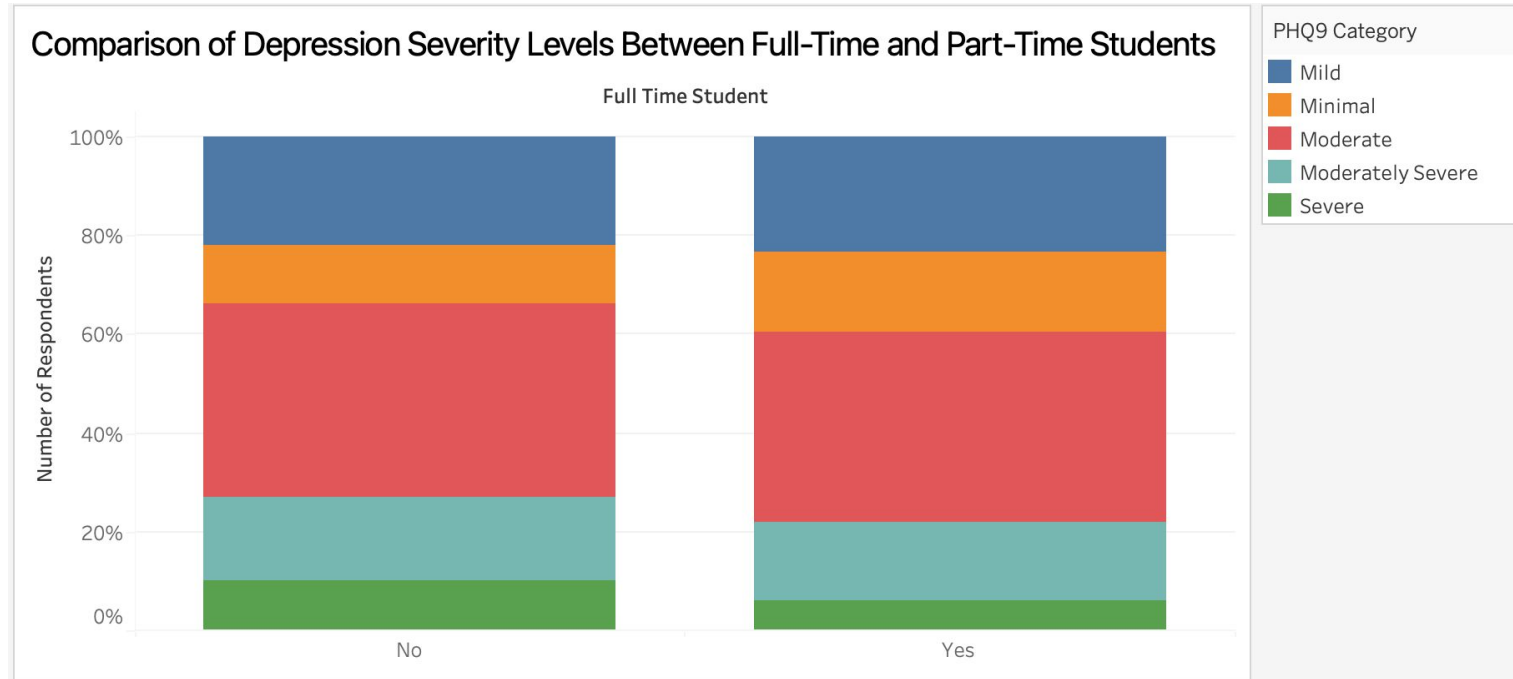
### Annotations:

Males in the "At Risk" group tend to have lower anxiety levels, while females are more represented in moderate to severe anxiety, indicating a gender disparity linked to health risk status. This difference may be influenced by social, economic, or health-related stressors, with females potentially facing added pressures such as caregiving and work-life balance when health risks are present.

### Follow-Up Question:

What external factors might contribute to higher anxiety levels in females within the 'At Risk' health category?





This chart displays the proportional distribution of depression severity levels among full-time and part-time students, offering a comparison of mental health trends that is unaffected by sample size differences

#### Annotations:

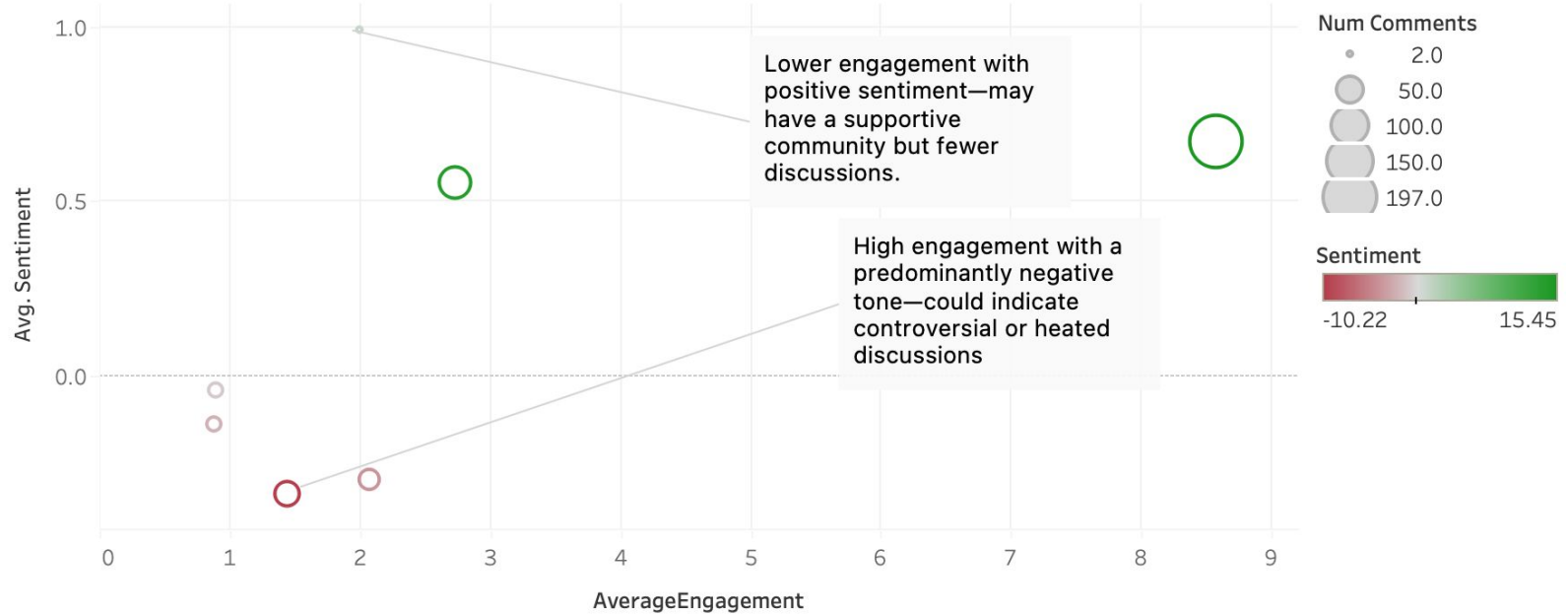
Part-time students show a slightly higher proportion of severe depression, it could hint at factors like work-study balance, financial responsibilities, or life stressors outside of school affecting their mental health.

#### Follow-Up Question:

What additional factors might contribute to depression severity differences between full-time and part-time students?

# **Analysis on Dataset 2**

## Subreddit Comparison: Average Sentiment and Engagement

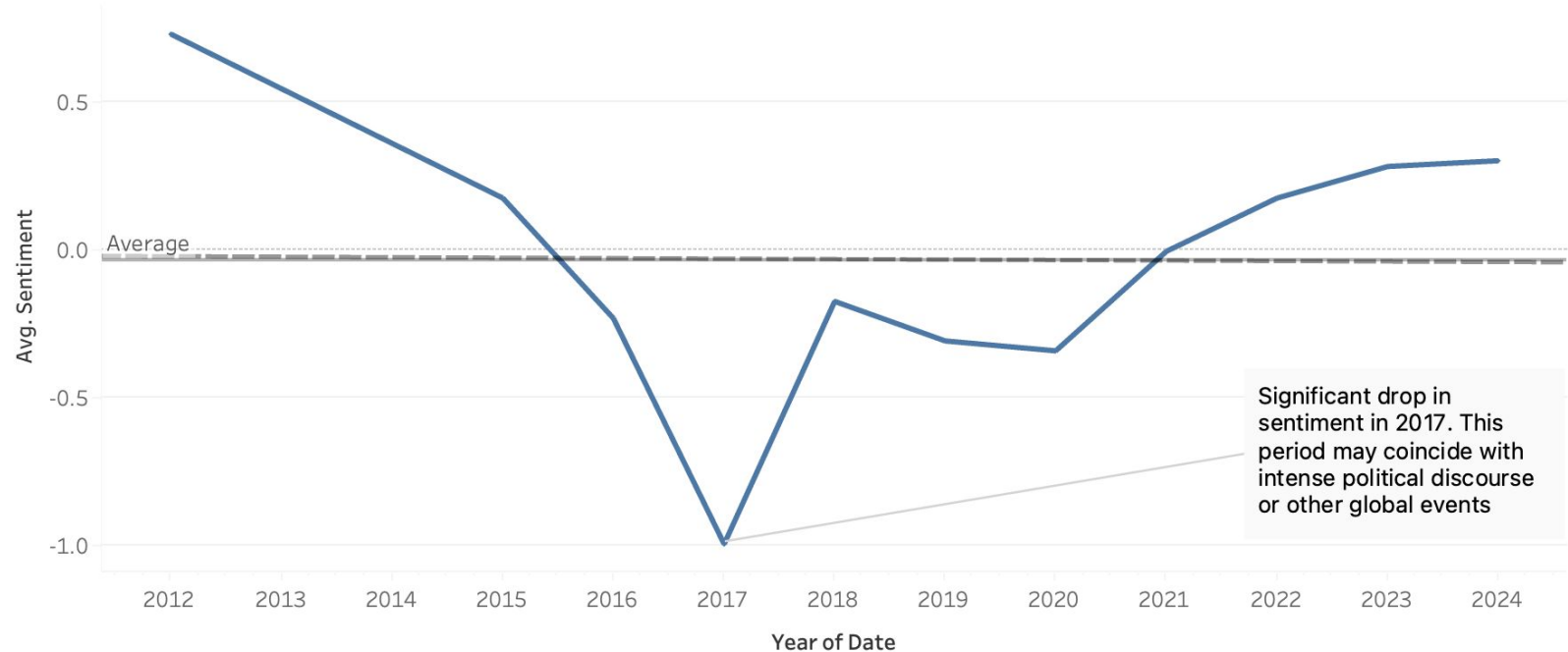


This bubble chart compares subreddits based on average sentiment and engagement, revealing distinct community tones and engagement levels.

### Follow-Up Question:

How does engagement influence sentiment in different subreddits? Do subreddits with high engagement tend to have more extreme sentiment scores, and if so, why?

## Sentiment Trend Over Time



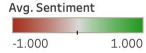
This line chart illustrates the average sentiment trend over time across all posts, with key dips and peaks highlighted.

### Follow-Up Question:

What specific events, such as political changes, social movements, or platform updates, might explain the dips and peaks in sentiment? Would additional sentiment analysis by subreddit reveal patterns unique to certain communities?



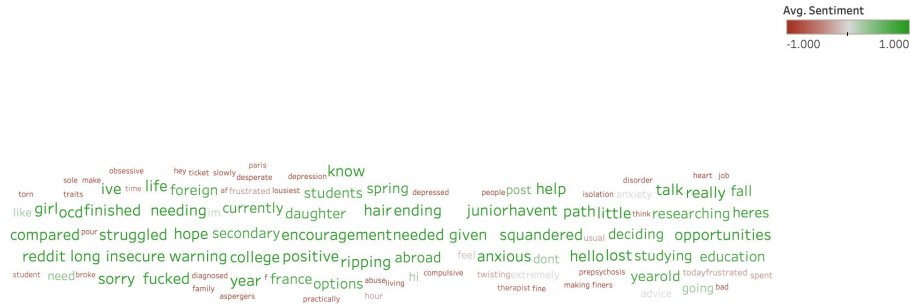
asshole journey grandmother wrote ex depression whats overcame going confession  
observations mentally troubled ive personal text



### Annotations:

In 2020, themes related to mental health, including terms like "depression," "compulsive," and "diagnosed," were prominent, likely reflecting increased concerns during the COVID-19 pandemic. Terms like "friend," "married," and "exchange" suggest a focus on personal connections amid isolation.

Shifts in Theme Focus from 2020 to 2024



Shifts in Theme Focus from 2020 to 2024



## Annotations:

In 2022, themes centered on academic life and future planning became prominent, with terms like "students," "college," "opportunities," and "studying." Mental health terms such as "anxious," "compulsive," and "depressed" remained significant but were slightly less prominent, indicating a shift toward career and educational concerns as students adapted to post-pandemic realities.

## Follow-Up Question:

As academic and career concerns became more prominent in 2022, did mental health discussions decline? What might explain the shift in focus from personal well-being to future-oriented topics?

## Shifts in Theme Focus from 2020 to 2024



### Annotations:

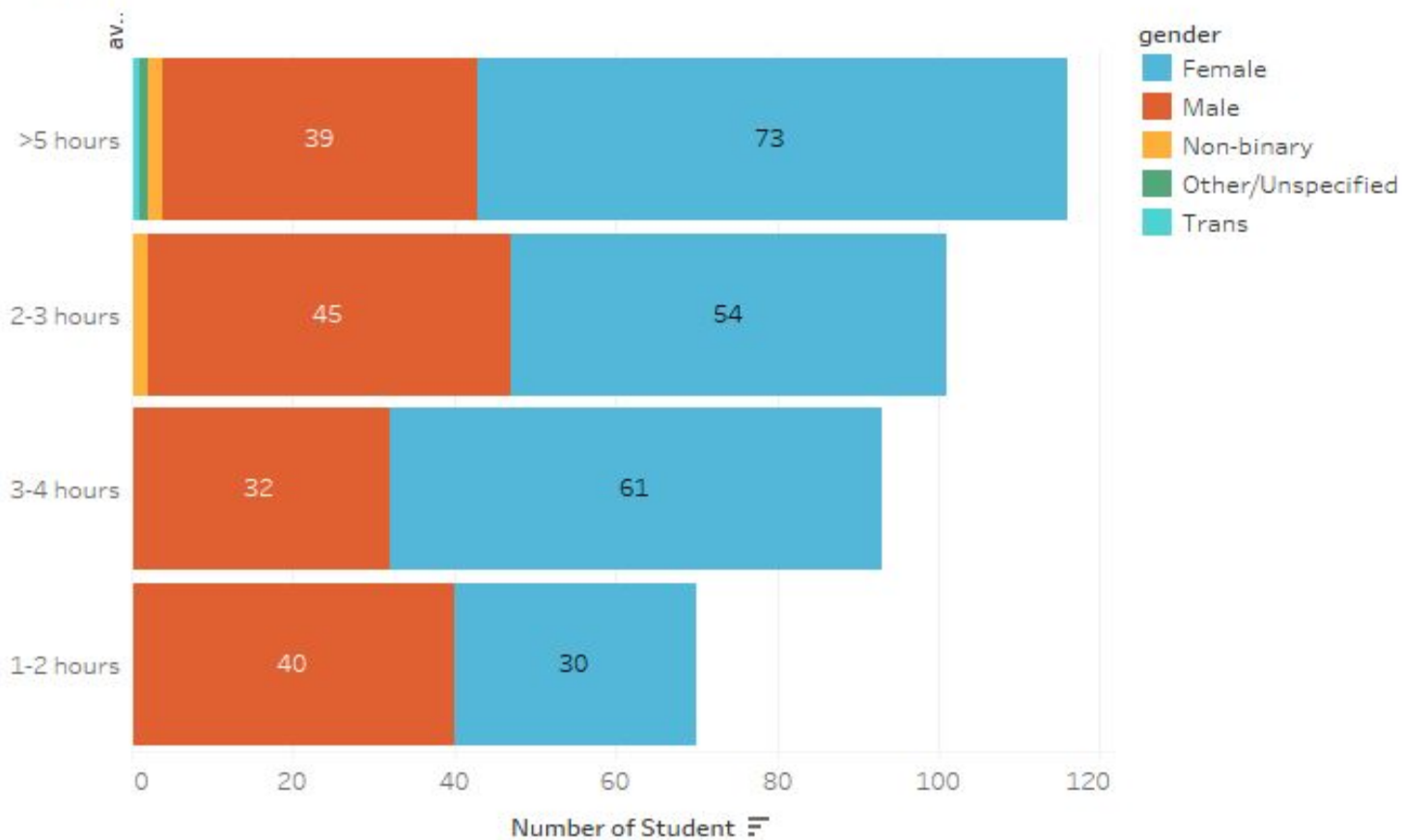
In 2024, the community prioritizes mental health amid pressures from academics, careers, and relationships, while navigating complex family dynamics. There's also a strong interest in global experiences and self-discovery, reflecting a focus on personal growth and identity during life transitions.

In general, mental health remains a core theme, now intertwined with career, relationships, and personal growth as users pursue complex, multifaceted life goals.

# **Analysis on Dataset 3**



## Daily Social Media Usage by Gender Among University Students



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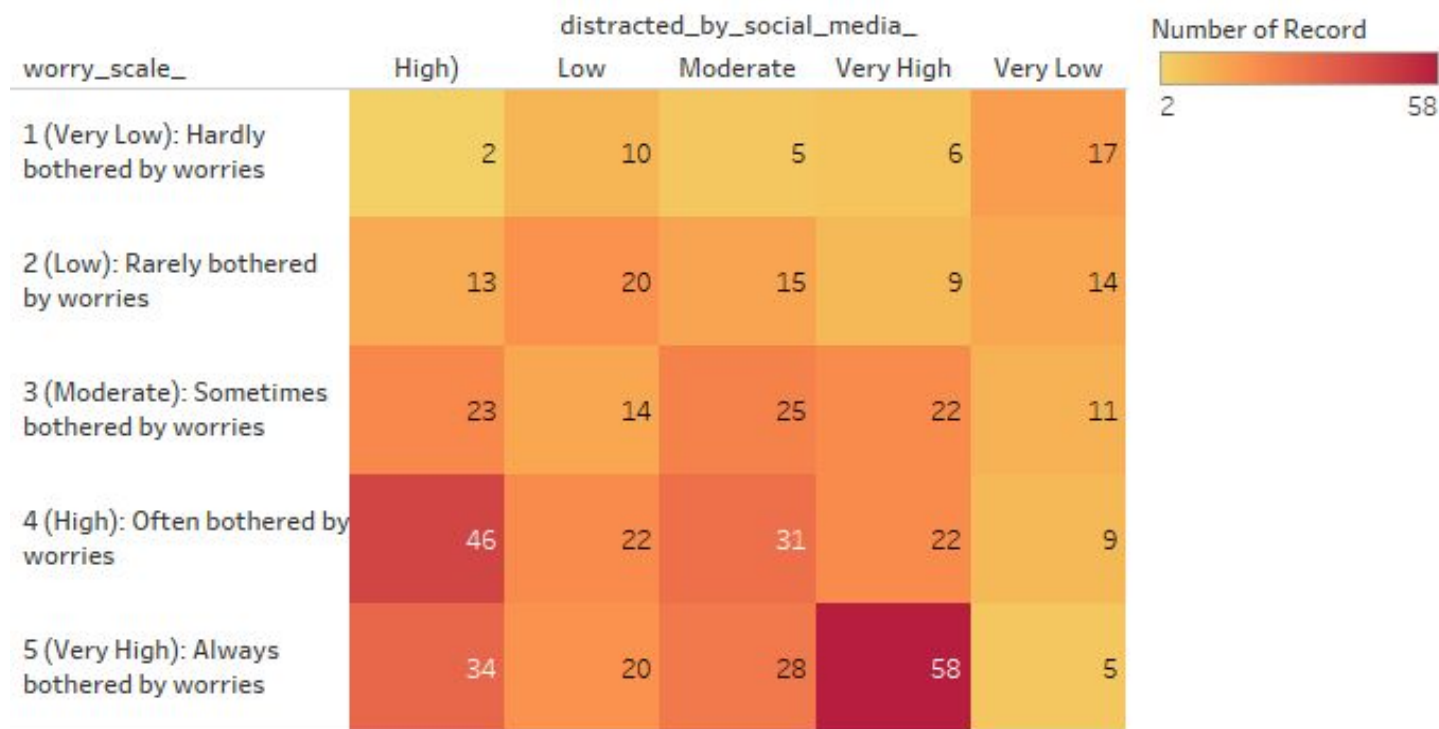
**Caption:** This bar chart shows daily social media usage among university students. Female students are more likely to spend over 3 hours on social media daily, potentially indicating a higher engagement or reliance on these platforms.

**Insight:** The trend suggests that female students are more intensive social media users, which could indicate a greater risk of social media impact on their mental health.

**Follow-up Question:** Does higher social media usage correlate with increased levels of anxiety or depression, particularly among female students?

**Name:** Iyoha Peace Osamuyi

## Impact of Social Media Distraction on Worry Levels Among Students



# Impact of Social Media Distraction on Worry Levels Among Students

**Caption:** This heat map reveals that students with high levels of social media distraction also report high worry levels, indicating that distraction might contribute to increased anxiety.

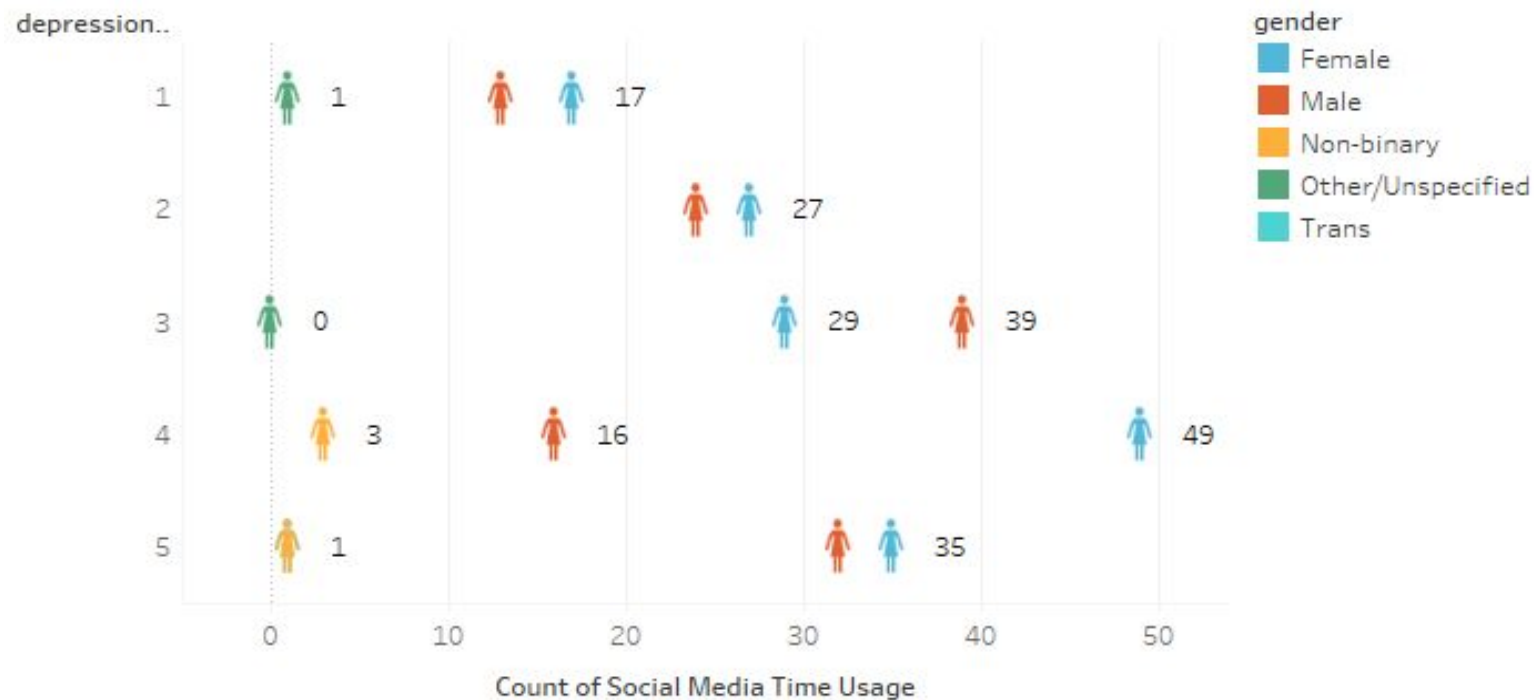
## **Insight:**

High social media distraction is strongly associated with frequent worry, suggesting that students who find social media distracting may experience heightened anxiety.

**Follow-up Question:** Is there a similar relationship between social media distraction and depression levels?

**Name:** Iyoha Peace Osamuyi

## Relationship Between Social Media Usage Time and Depression Levels Among Students by Gender



# Relationship Between Social Media Usage Time and Depression Levels Among Students by Gender

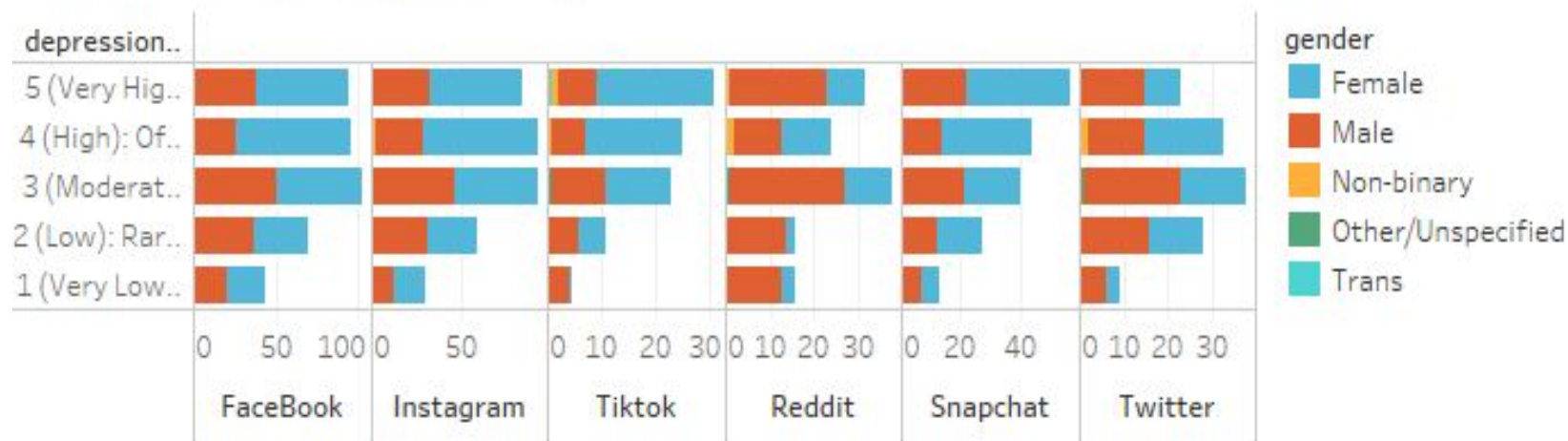
**Caption:** This scatter plot shows a positive relationship between time spent on social media and depression levels, with female students exhibiting higher depression scores with increased usage. The clustering at higher depression levels suggests a correlation between prolonged social media use and increased depression symptoms.

**Insight:** The data reveals that students who spend more time on social media, particularly female students, are more likely to experience elevated depression levels.

**Follow-up Question:** Are specific social media platforms more closely associated with higher depression levels among heavy users?

**Name:** Iyoha Peace Osamuyi

## Depression Levels Among Students by Social Media Platform Usage and Gender



# Depression Levels Among Students by Social Media Platform Usage and Gender

**Caption:** This set of bar charts shows reported depression levels across different social media platforms, segmented by gender. Platforms like Instagram and Twitter have higher concentrations of students, particularly female students, reporting high depression levels (4 and 5), suggesting that some platforms may have stronger associations with mental health impacts.

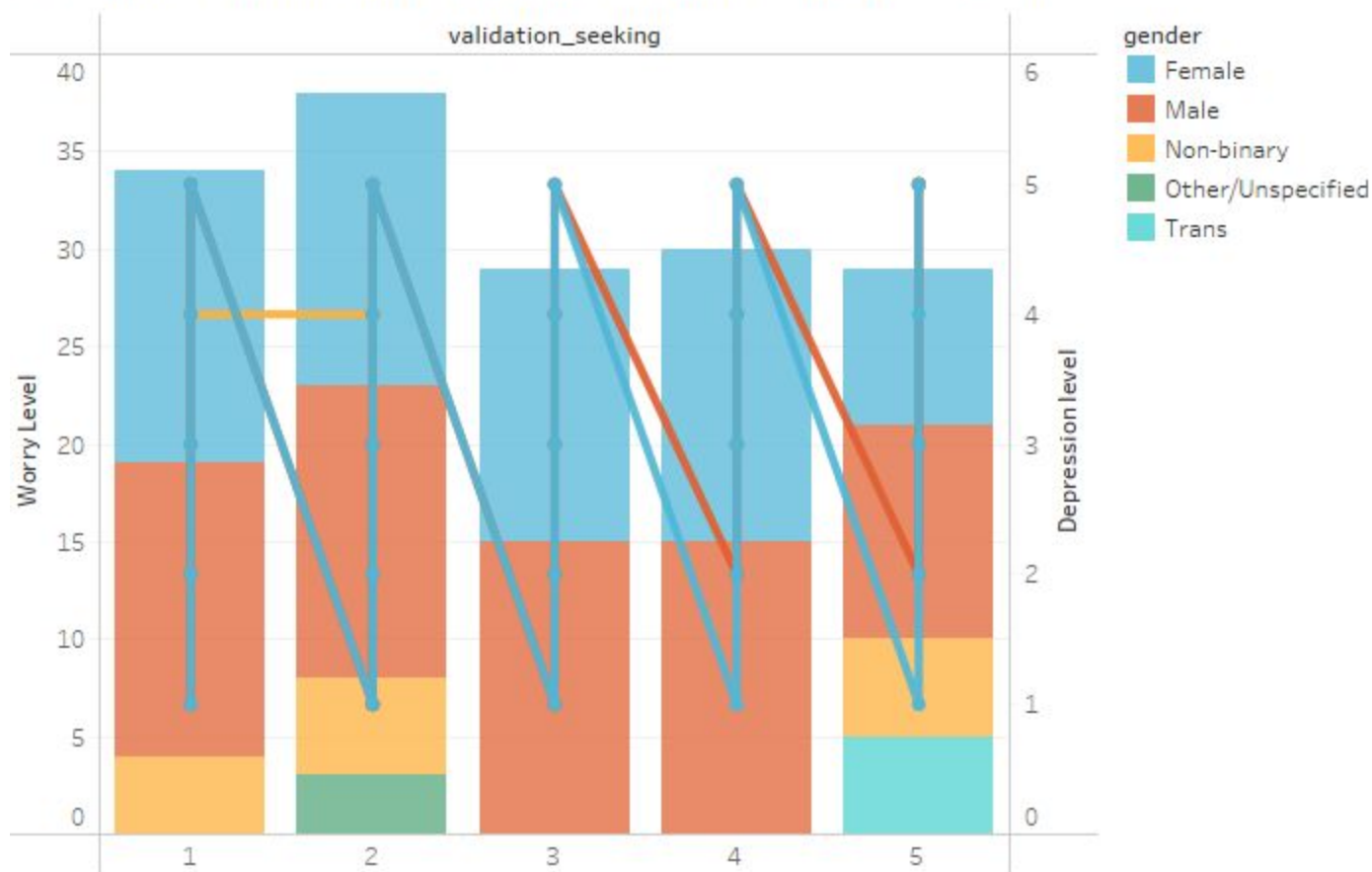
**Insight:** This analysis indicates that Instagram and Twitter are associated with higher depression levels, which may be due to specific features on these platforms that encourage comparison or validation-seeking.

**Follow-up Question:** What aspects of Instagram and Twitter could be contributing to higher depression levels?

**Name:** Iyoha Peace Osamuyi



## Validation-Seeking Behavior on Social Media and Its Association with Depression and Worry Levels by Gender



# Validation-Seeking Behavior on Social Media and Its Association with Depression and Worry Levels by Gender

**Caption:** This dual-axis bar and line chart shows the relationship between validation-seeking behavior on social media and mental health indicators, including worry and depression levels, by gender. Higher validation-seeking scores correlate with increased worry and depression, particularly among female students. This suggests that validation-seeking behavior may amplify mental health challenges for some users.

**Insight:** The data suggests that students who seek validation on social media are more vulnerable to both worry and depression, particularly females, who may feel a greater need for social approval.

**Follow-up Question:** What types of validation-seeking behavior (e.g., likes, comments) are most strongly associated with mental health issues?

**Name:** Iyoha Peace Osamuyi

# **Analysis Impact on Dataset 1 and 2**

# Analysis Impact on Data Collection and Research Question

## **Refine Data Collection on Social Media Behaviors**

- Collect specific data on social media activities, like passive scrolling, active engagement, and content creation, to understand their distinct impacts on mental health.
- Gather information on situational aspects (e.g., time of day, emotional state, reason for social media use) to capture how context influences mental health outcomes.
- Include variables like study load and part-time work status to identify if certain groups are more affected by social media, allowing for targeted insights.

## **Refine Research Question**

- Shift the question to focus on how specific social media activities and contexts correlate with mental health outcomes, leading to more precise findings.

# **Analysis Impact on Dataset 3**

# Analysis Impact on Data Collection and Research Question

This analysis suggests that specific social media platforms and behaviors—like high validation-seeking, frequent distractions, and comparison with others—may have stronger associations with mental health outcomes such as depression, anxiety, and sleep disturbances. This insight could prompt a more focused data collection approach, targeting platform-specific engagement details (e.g., time of day, frequency of use) and behavioral patterns.

The research question might shift from a general exploration of social media usage and mental health to investigating **how distinct social media behaviors on specific platforms uniquely impact mental health indicators**. This refined focus could yield more actionable insights, especially in identifying "at-risk" usage patterns.

# Limitations and Desired Visualizations Beyond Tableau's Capabilities

## Dynamic Time-Lapse Visualization

- *Purpose:* To show changes in mental health indicators over time, such as fluctuations in anxiety or depression rates year by year.
- *Limitation:* Tableau's static format lacks dynamic, animated capabilities that could illustrate trends over time in a visually compelling way.

## Interactive Network Graph

- *Purpose:* A network graph would show the connections between each social media platform and mental health indicators (e.g., depression, anxiety, sleep disturbances), with weighted edges to represent the strength of correlation between them.
- *Limitation:* Tableau doesn't natively support network graphs. Constructing this in Tableau would require significant data manipulation and wouldn't have the same dynamic quality.

# Team Contributions

## Aayush Paudel

- Conducted API call to retrieve data from Reddit
- Performed feature extraction through word tokenization to analyze Reddit posts in greater detail, facilitating sentiment and topic analysis
- Cleaned and transformed the survey data, ensuring consistency and usability for analysis.
- Calculated mental health scores (PHQ-9 for depression and GAD-7 for anxiety) to create quantifiable features
- Refined the research question and proposed adjustments for enhanced data collection

## Iyoha Peace Osamuyi

- Researched relevant background information and sources
- Designed and structured presentation slides
- Conducted the exploratory analysis on the **Dataset 3** that shows the relationship between social media usage and mental health indicators among university students.
- Developed visualizations which includes: charts on daily social media usage by gender, social media distraction's impact on worry, depression levels across platforms, and validation-seeking behavior.
- Wrote captions, insights, and follow-up questions for each visualization, ensuring each slide had clear and actionable findings.



Thank You!