

Aim: This information visualization aims to analyze social media posts and comments to understand trends in mental health indicators and act as a space of support and empathy for people who may be experiencing mental health challenges and seeking reassurance that they are not alone in their struggles.

Target Audience: Younger generations (Gen Z) experiencing mental health issues who seek support from online resources.

Why?

- Gen Z individuals are often considered digital natives, and are more likely to seek support and information online (Cuncic, 2023).
- Research indicates that Gen Z encounters higher anxiety and depression rates compared to older generations (Boland, 2022). Their increased vulnerability emphasizes the necessity for tailored support and resources.

Desired Insights

Ubiquity of Social Media: This section highlights the widespread use of social media worldwide, emphasizing its relevance for analyzing mental health behaviors. A choropleth map was chosen to visualize social media usage across different countries as it is useful in displaying data tied to geography

(<https://datavizproject.com/data-type/choropleth-map-2/>), ultimately providing a clear representation of social medias' global penetration. The accompanying text acts as the connection between social media behaviors and mental health.

Growing Mental Health Issues: Showcases the rising suicide rates in the US, this section aims to draw attention to the ever rising mental health issues. An area chart effectively displays this data as they are useful in showcasing trends over time

(<https://datavizproject.com/data-type/stacked-area-chart/>), though initial plans for a gradient chart were adjusted to a filled area chart due to limitations of Plotly.js. Accompanying text and visuals contextualize the data, emphasizing the

Impact of Social Media on Mental Health: This section aims to raise awareness about the negative effects of social media, supported by statistics from external references for greater impact. An area chart was used to illustrate the growth of negative interactions on social media.

Negativity on Social Media: Utilizing pie charts for various platforms, this section visually compares the ratio of negative to positive posts across social media platforms. Reddit's higher ratio highlights its vulnerability to mental health issues, reinforcing the need for special attention on the platform. Section aims to show that anonymity on social media is a double edged sword and can also have negative repercussions like cyberbullying, etc.

Prevalence of Mental Health Issues: Consists of WHO statistics on depression and anxiety, along with a bar chart of popular mental health subreddits, depict the prevalence of these issues. This aims to create a sense of solidarity, empathy and a sense of urgency among readers to take action and try to get help.

Understanding Anxiety: Focusing in on anxiety, this section provides insights into common symptoms of anxiety through a word cloud from the anxiety subreddit. A horizontal bar chart showing a sentiment analysis of popular mental health subreddits reinforces anxiety's high negative sentiment, unlike other mental health issues.

Root Causes of Mental Health Issues: Aims to educate users on mental health, this section employs a grouped bar chart to illustrate the correlation between perceived root causes and mental health issues. A grouped bar chart was used here as this chart type allows for the comparison of multiple categories (root causes) within each mental health issue, providing a clear visual representation of how different factors contribute to various conditions.

Call to Action: Featuring a CTA button directing users to HealthDirect, along with supporting empathetic text. This section encourages users to take action to get better. An inspirational quote at the end adds a supportive tone, complementing the call to action, leaving the user inspired, and motivated to change.

Process and Development

To cater to a younger audience, the tone of the visualization is approachable, empathetic, and supportive. It uses language that is easy to understand and relatable, avoiding technical terms. The supporting illustrations feature soft shapes and a warm color palette in order to convey a sense of comfort to readers (Henderson, 2021). The color palette features warm tones with primarily yellow and orange hues, reflecting positivity and hope, while also ensuring readability and accessibility (Nygaard, 2017). Warm tones are proven to connect with mental health themes and improve users mood.

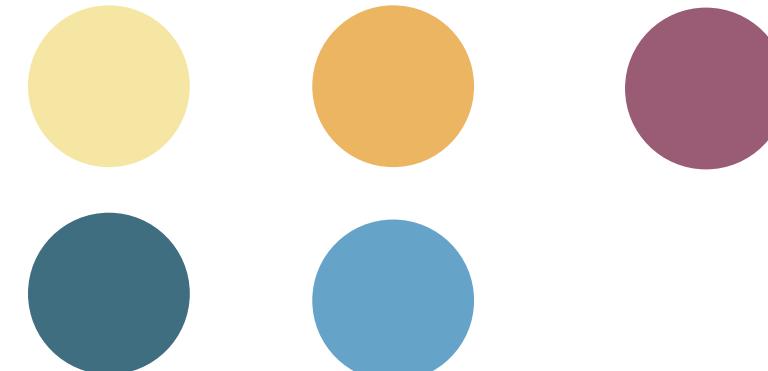
Clean sans-serif font chosen for its modern appearance and ease of readability, especially on digital platforms.



Supportive and empathetic tone



Illustrations made with soft shapes and warm colors to convey feelings of comfort



Segoe UI Light
Segoe UI Regular
Segoe UI Semibold
Segoe UI Bold

Clean sans serif font for ease of readability

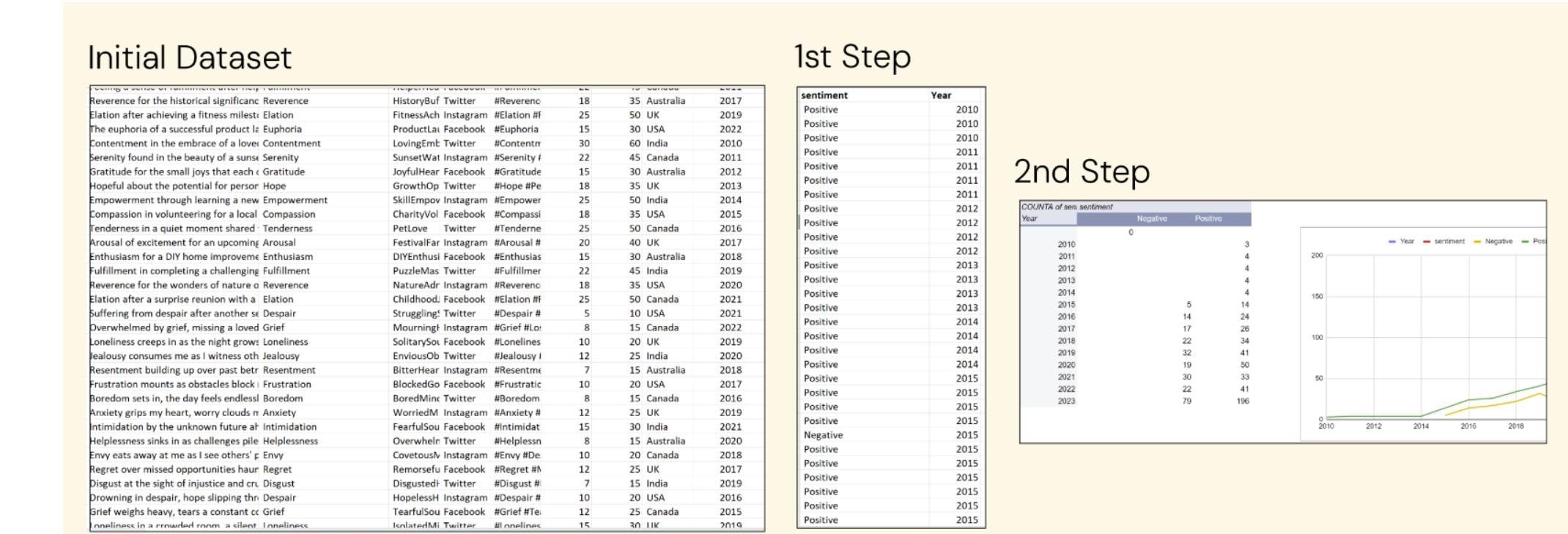
Warm tones to induce positive feelings in readers

Data Wrangling

Before generating insights, I started preprocessing the data by extracting relevant data elements.

Simplified sentiment analysis by consolidating diverse sentiments into either positive or negative categories using the 'Find and Replace Values' feature in Google Sheets

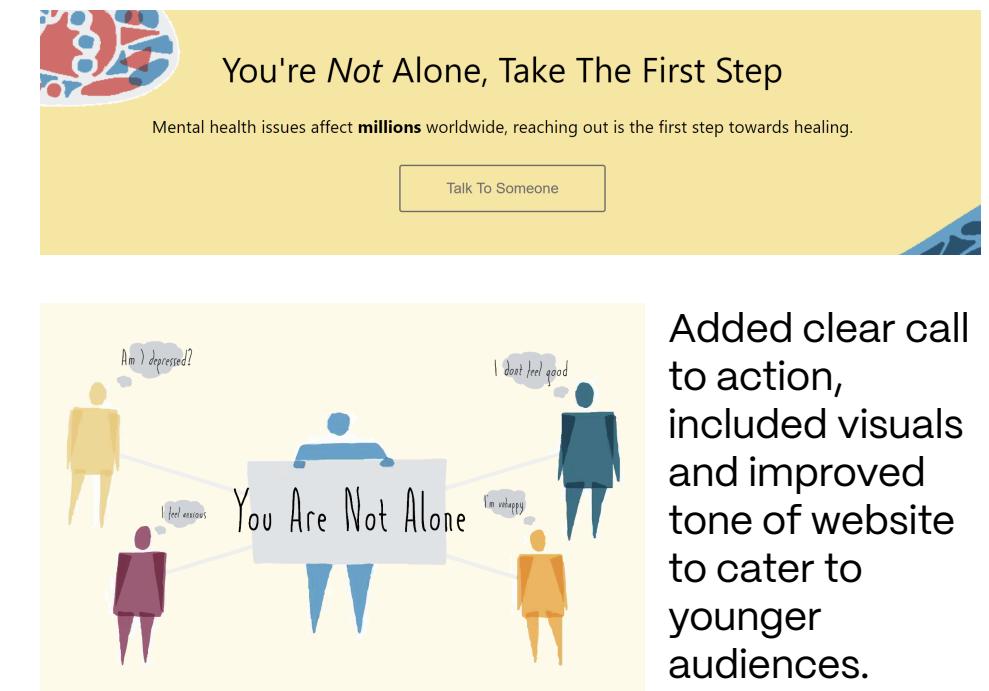
Removed irrelevant columns and inserted a pivot table to get sum of comments/posts overtime. This was subsequently visualized with an appropriate infographic.



Post A1 Changes (Tutor Feedback)

Feedback: "Website **needs a clear target audience** and design choices need to be justified for the specific audience. **Does not seem to convey an over-arching goal or CTA.**"

Outcome: Fleshed out websites purpose and goals while catering to a specific target audience.



Added clear call to action, included visuals and improved tone of website to cater to younger audiences.

User-Testing

Goal: The goal of this testing was to ensure that the webpage created an experience that fosters empathy and support for those experiencing mental health challenges while also making sure that the involved data visualisations are accessible and easy to comprehend.

Questions that need to be answered:

1. Is the tone of the webpage empathetic such that it resonates with the target audience?
2. Did users find the storytelling flow of the article effective in conveying its message?
3. Are there any parts of the text or charts that users felt needed more emphasis?
4. Were users able to understand the fluctuations in suicide rates?
5. Are users able to understand the perceived root cause of mental health issues and why it is significant to the visualisation?

Testing Method: Think Aloud Protocol

Participants: 9 University students (Closest to target user group as it was hard to find younger audiences that are willing to share their mental health struggles)

Success Metrics: In my usability test, the tasks are laid out such that users either are able to either finish a task or not. This means that the success metric was just measured as a fraction of the participants (eg: X/9 participants were able to...)

Tasks:

1. Read through the introductory paragraphs and skim through the visualization. Then, describe your emotional response to the tone of the webpage and how well it resonates with you.
2. Read the article from start to finish, paying attention to how the information is presented and how one section flows into the next. Afterward, summarize the main message or story that the webpage is trying to convey.
3. Identify any sections of the text or elements in the charts that you feel are emphasized or stand out. Describe why you think these elements are emphasized.
4. Review the section of the visualization that discusses fluctuations in suicide rates over time. Describe your understanding of why these rates fluctuate
5. Explore the section of the visualization that discusses the perceived root causes of mental health issues. Describe your understanding of why these root causes are significant in the context of the visualization.

Findings:

3 out of 9 participants felt that there was too much text at times and mentioned that they did not find the text engaging.

8/9 Participants found that the story had good flow and all participants accurately described the purpose of the webpage.

3 / 9 participants felt that more context around suicide rates and their implication was lacking.

All participants felt that the final chart (Root cause of mental health issues) chart was clear and easy to comprehend

Understanding the Growing Decline in Mental Health Through Social Media Interactions

Over the past decade, social media has become ubiquitous across the world, making it a useful tool to analyze the mental health of our population. By examining language and engagement patterns on social media platforms, it's possible to gain a deeper understanding of the factors influencing mental health in the digital age.

Ubiquity of Social Media

Social media platforms serve as significant channels for communication and expression globally. The Statista Digital Population Survey found that as of April 2024, there were 5.07 billion social media users worldwide, which amounted to 62.6 percent of the global population.

Asia was home to the largest number of online users worldwide – over 2.93 billion at the latest count. Europe ranked second, with around 750 million internet users. China, India, and the United States rank ahead of other countries worldwide.

2023 Social Media Users by Country



Before

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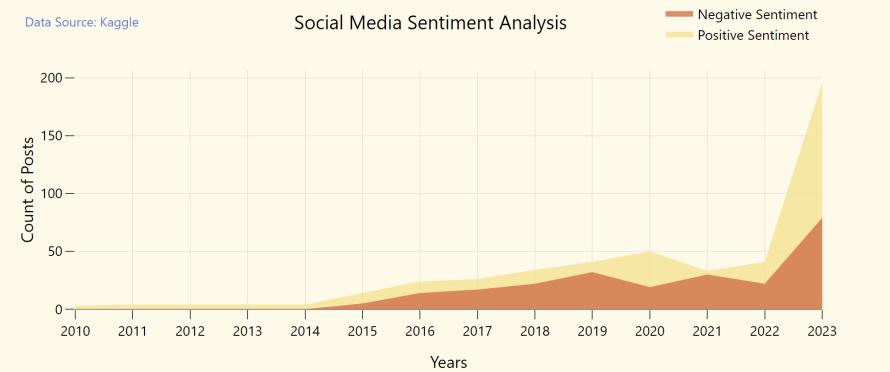
2023 Social Media Users by Country



After

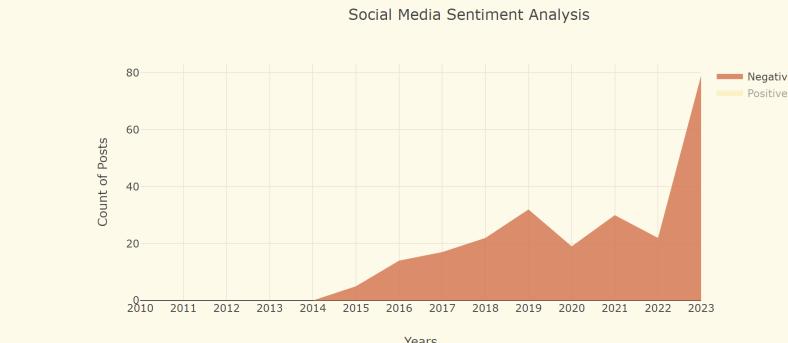
Improved legibility and made the text content more engaging by emphasizing certain parts of the text by making them bold.

These findings highlight the need for greater awareness and action to address the negative mental health consequences of social media usage. Failure to effectively mitigate such behaviors perpetuates an environment where negativity thrives.



Negative comments on social media have tripled over the past 8 years, indicating a trend of increased stress, anxiety and other mental health issues in our population.

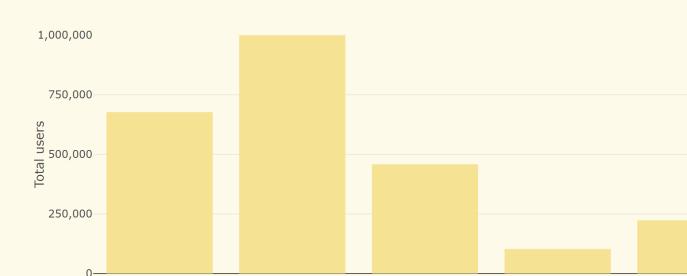
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After

Adjusted the positive trace to view only, so that users are able to focus on the negative interactions of social media instead of it being eclipsed by trends of positive posts.



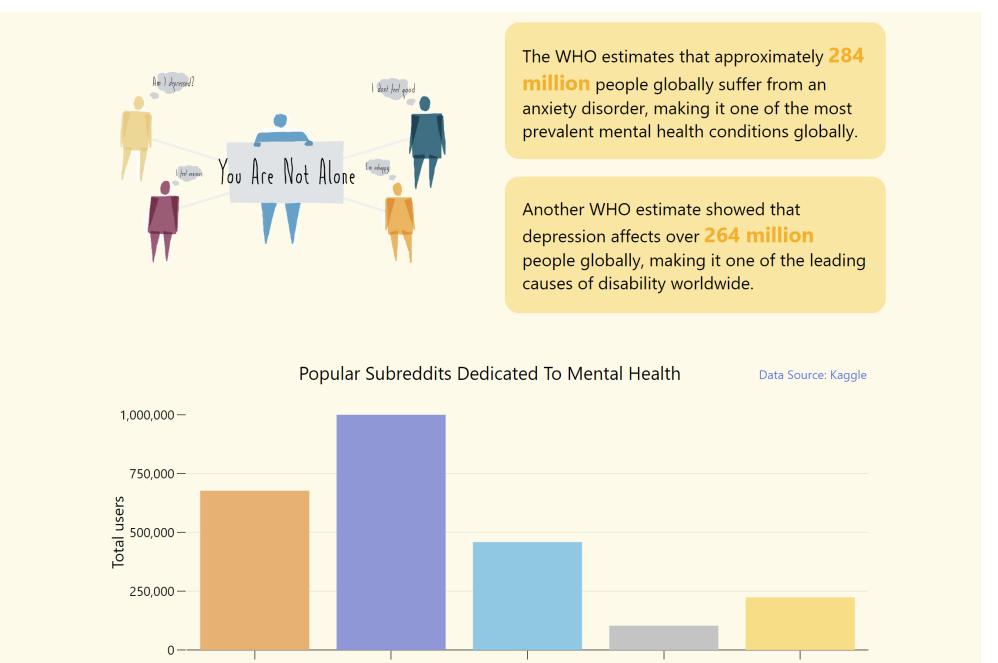
Subreddits with most active users: r/Anxiety and r/Depression. Popularity of these subreddits indicate the rise and prevalence of these mental health issues in our society.

Understanding Anxiety

Anxiety arises from the brain's evolutionary response to perceived threats, triggering physiological reactions (LeDoux, 2012). It

Before

The previous chart confused some users as I had the same color palette as negative/positive sentiment charts; leading users to believe that the yellow color somehow correlated to a positive sentiment even though this was a completely different chart.



After

Changed the color palette of bar chart to avoid confusion amongst users.

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<https://plotly.com/python-hover-text-and-formatting/>

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NARRATIVE AND USER-TESTING REFERENCES (DESIGN RATIONALE)

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