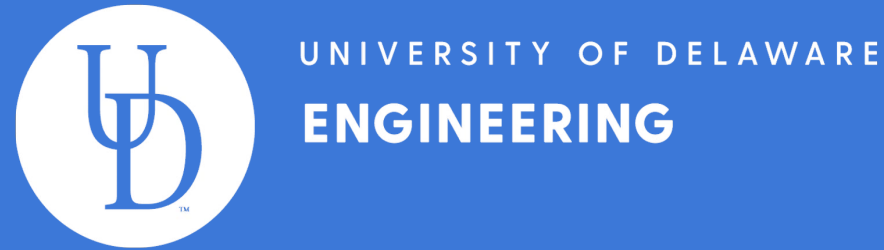# Opportunities and Challenges in Mental Health Mobile Applications

Moath Erqsous, Faith Lovell, Benita Abraham, Andrew Ngo, and Matthew Louis Mauriello

UNIVERSITY OF DELAWARE
ENGINEERING

SENSIFY LAB

MOTIVATION

Today there are **~20,000** mental health applications (apps) on the market [1]. Popular app, like Calm, have **50+ million** downloads. In our work, we focus on user's sentiments about these apps, their existing challenges, and look for underserved mental health needs.

METHOD

We collected a dataset contains **200,973** user reviews from **73** apps mental health apps. To ensure privacy of users, we anonymized usernames. We then manually labeled **3000+** user reviews for sentiments and conduct further thematic analysis [2] building upon previous studies [3] to extract common themes from reviews. Examples of comprehensive reviews that show the used function or the effectiveness of the app see (Example 1 & Example 2).
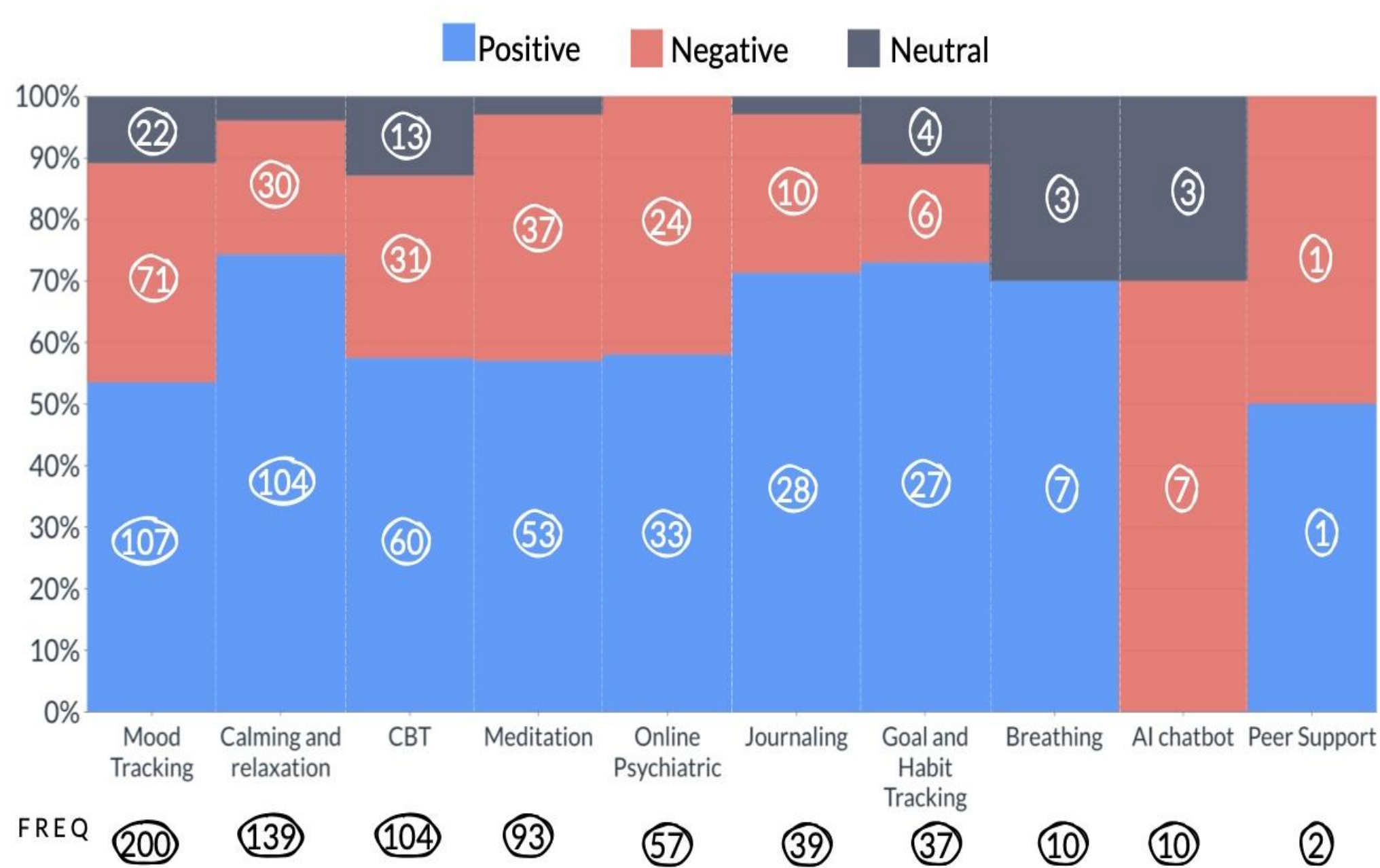

Figure 1. Frequency of sentiment analysis and application types

FINDING 1

Anxiety, stress, depression, and sleep conditions have high frequency an example of a positive review (Figure 3). This suggests that current apps primarily focus to these concerns, leaving other conditions like ADHD, bipolar, PTSD, and OCD underserved.

FINDING 2

60% of reviews are positive, particularly for apps like mood trackers. However, therapy and AI chatbot apps show higher negativity due to perceived repetitiveness and lack of depth.

Example 1. A positive review

> "I have anxiety disorder and this app especially breathing and meditation part are perfect and helpful for me. It helps a lot ❤❤❤."

Example 2:. A negative review

> "Used this app for over a year, with detailed day to day notes on a semi daily basis, only for all that years' worth of data to be completely wiped on one updated."

COMMON CHALLENGES

1. High cost, which create a barrier to access mental health apps.
2. Poor functionality, that make them difficult to use. Technical issues, such as bugs.
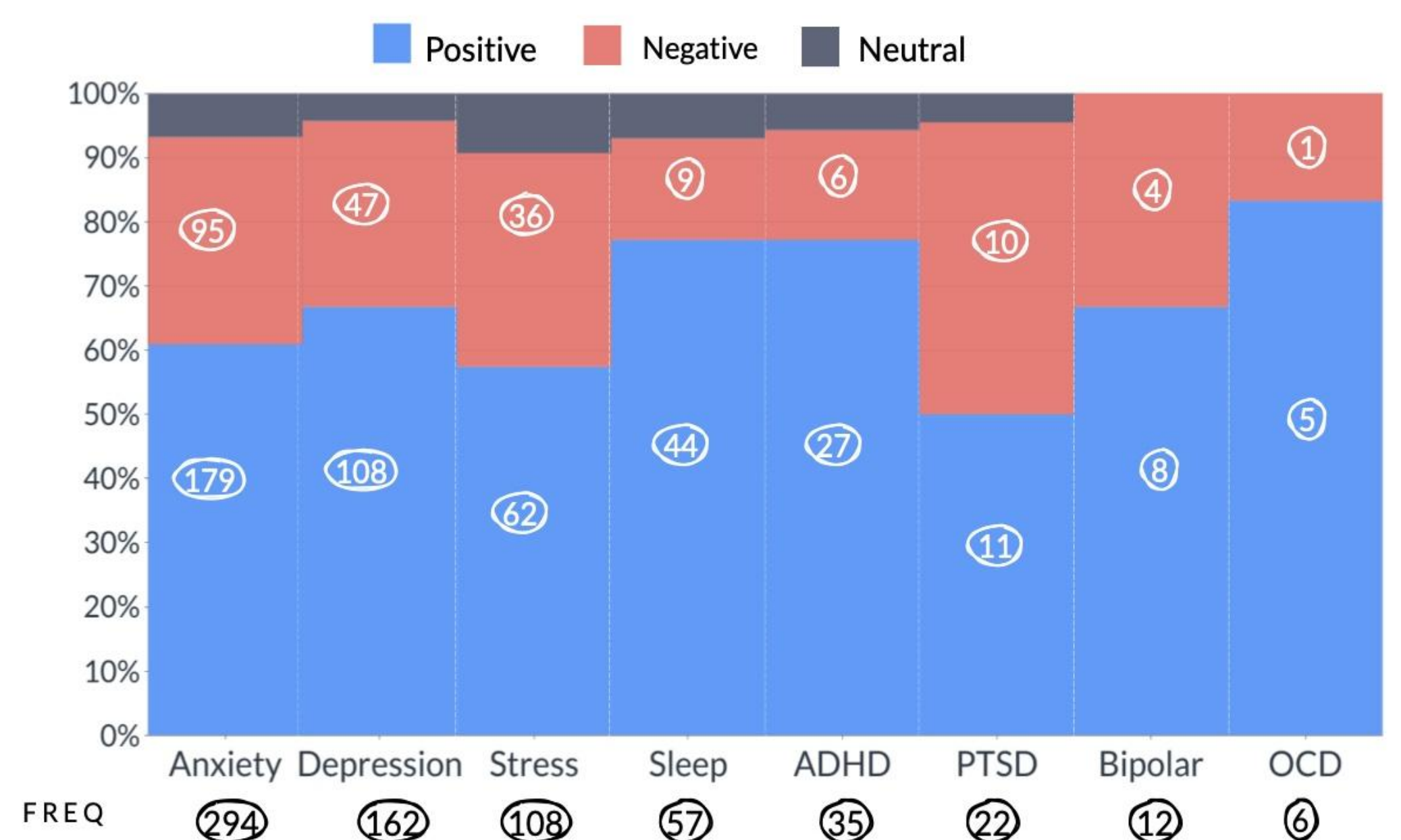3. Lost data makes users lose years of valuable information in (Example 2)

Figure 2. Frequency of sentiment analysis and Mental health conditions

CONCLUSION

Our findings underscore the need for continuous improvement, particularly in addressing the diverse needs of all users. By leveraging insights from user reviews, we can ensure a future where mental health support is **accessible, effective,** and **inclusive.**

REFERENCES

[1]   Schueller, S. M., Neary, M., O'Loughlin, K., & Adkins, E. C. (2018). Discovery of and interest in health apps among those with mental health needs: survey and focus group study. *Journal of medical Internet research*, *20*(6), e10141.

[2]   Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, *3*(2), 77-101.

[3]   Oyebode, O., Alqahtani, F., & Orji, R. (2020). Using machine learning and thematic analysis methods to evaluate mental health apps based on user reviews. *IEEE Access*, 8, 111141-111158.

To learn more about this ongoing work, email Moath at merqosus@udel.edu. And scan our QR code for the lab web page.