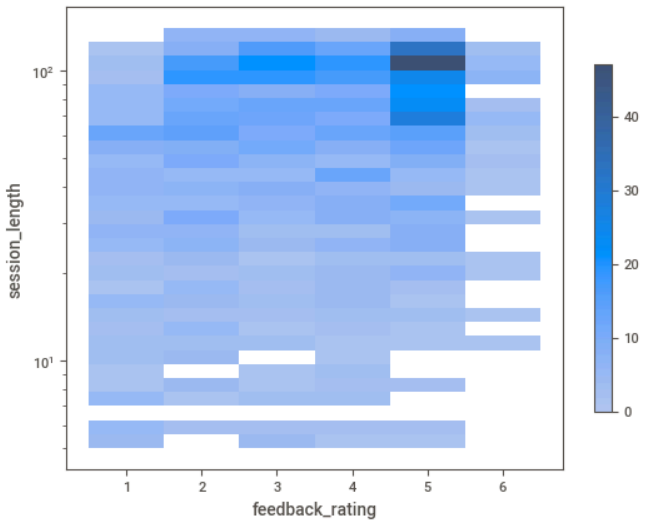
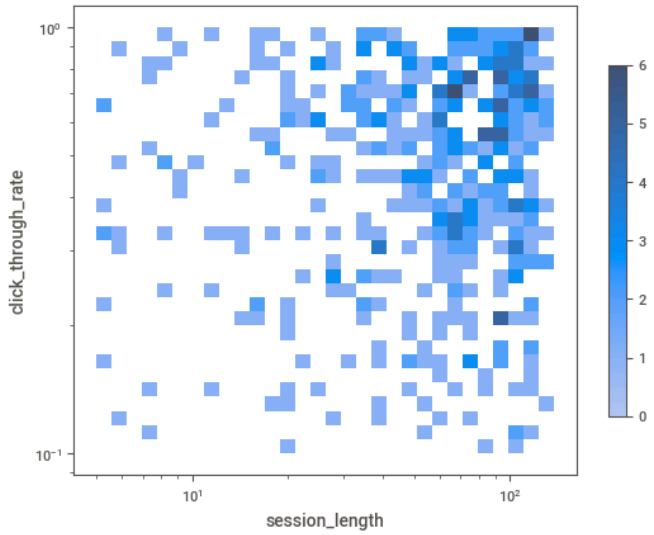
User Activity and Recommendations



Based on our user activity data, better experiences are correlated with longer sessions. As seen in the bivariate distribution, **there is a significant correlation between length of chat session and user feedback**, with a cluster of users with reported good experience having long chat sessions[1]. This confirms an intuitive understanding: **mental health issues are complex, and users have a better experience after spending around 2 hours chatting.** This is a compelling discovery for our value proposition: most traditional therapy sessions are under an hour. Having more time to talk allow users to process and understand their struggles, and Supportiv chat sessions offer something that traditional therapy is unable to do.



Beyond having a better experience during longer sessions, **a highly engaged user exhibits both activeness using the chat and interest in personal learning and growth.** In other words, **users who have longer chat sessions often tend to more receptive of recommendations.** As suggested in the bivariate distribution with click through rate and session length, willingness to dive into content[2] is highly correlated to session length.

Suggestion

For future research, we might dive deeper into marketing and psychiatric/neuroscientific research related to session length, and cross reference with our user activity data. Textual analysis can also be helpful here to discover a user's emotional needs during the session, and help us keep users engaged to spend more time unwrapping their issues. Further, we can consider consolidating and emailing list of recommendations after long chat sessions to keep users engaged.

Time-based patterns

We discovered that **a large amount of chat sessions happen on Sunday and Monday**, potentially due to anxiety of going back to work. There are more sessions on Wednesdays than usual, which also make intuitive sense when we consider a common work week. **On a daily basis, there's a surge of chats that happens around midnight** (potentially due to sleep anxiety and being on the phone before bed)**, and then again at 7am** (right before work)**, decling until after lunch, where we experience another surge in traffic, and then a smaller surge after dinner.** [3] (See number of chat sessions by hour-of-day and day-of-week chart here).

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[1] Here we used logged session_length to adjust for distribution. The actual chat length where this cluster is falls at around 100-120 minutes, assuming this field is provided in minutes.
[2] Defined by click through rate.
[3] We assume EST timezone throughout, see Appendix for further explanation.

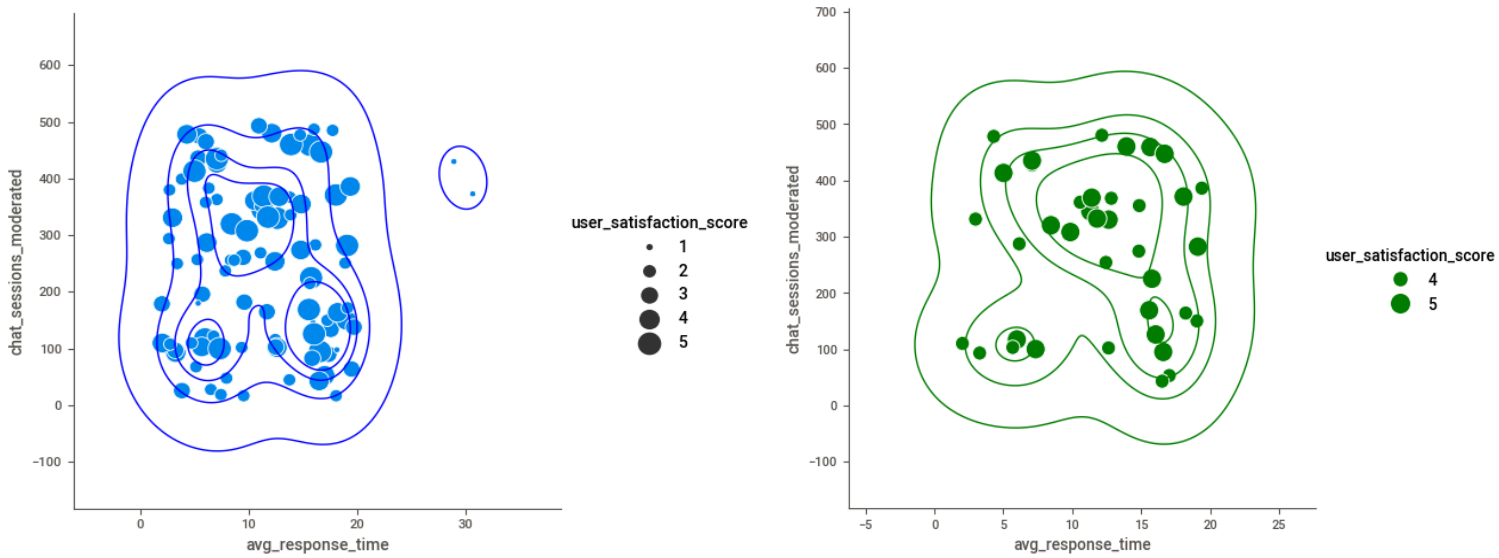
We found that **CTR trend throughout the day is similar to session length trend, surging at around midnight**; and similar to resources clicked during each session, **higher avg CTRs are exhibited for after lunch and after dinner hours**. Additionally, Wednesday also seems to be the best day in terms of CTR. Additionally, while **sessions are often longer around midnight with a sharp decline at about 4am**, users are more likely to consume content after lunch and dinner time. (See CTR trends here, and session length and number of resources clicked trends here)

Suggestions

- **Fine-tune recommendations / train new recommender with more data (Data Sciene Team):** Examples: sleep hygiene related content at around midnight, workplace topics on Wednesdays before work hours begin
- **Moderators hiring and training (Peoples Team):** According to the topics that might be highly common during a certain period, the peoples team can look for candidates who are particularly experienced/passionate about these topics. Since moderators with more experiences perform better[4], consider training new moderators by asking to shadow high-performing moderators during high-traffic hours (around midnight, before work, and after meals). Since sessions are longer at around midnight and after lunch hours, consider focusing more on overseas moderators, or adjusting pay scale to incentivize moderators who are available during high-demand hourss
- **Resources Allocation (Engineering Team):** Schedule data processing according to these timeframes

Moderator Performance

Comparing correlations with user satisfaction score, we find that experience[5] of the moderator can be a better indicator when it comes to defining high-performers[6]. High performers aren't necessarily the fastest to respond, in fact, fast responders are often also low performers, clustering at around 2 for their average satisfaction scores[7]. Here's a quick look at where moderators fall on the spectrum of experience and response time, comparing the entire sample (left) with high performers.



[4] See the Moderator Performance section for more.
[5] Defined by number of chat sessions moderated.
[6] Moderators with 4 or 5 average satisfaction score.
[7] The bivariate distribution can be seen here.

As we can see from the changes in cluster contours, **high performers tend to have racked up a good amount of experience[8], and they tend to take their time responding**. In the future, we can develop clustering algorithms to understand refine these characteristics. For now we can use these heuristics to find and train moderators to be high performers. **Moving forward, the Peoples team can consider prioritizing moderators gaining moderating experience, and emphasize taking enough to respond thoughtfully.** This can include shadowing, reviewing and analyzing chat history, etc.

Disclaimer: I confirm that I did not use third-party AI systems (such as OpenAI, Claude, Gemini or similar tools) for my work in this challenge.

[8] Correlation between chat session length and user satisfaction score can be found here.