Changes on Mental Health Forums during the COVID-19 Pandemic
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Motivation
Pandemics and disasters can have severe negative consequences on mental health. The pandemic may significantly change discussion on mental health forums.

Data
Three mental health subreddits: r/Anxiety, r/depression, and r/SuicideWatch
Fifty control subreddits, including: r/AskMen, r/personalfinance, r/relationship_advice
Posts and comments from January 2017 – May 2020

Methods
Features extracted:
- Daily post count
- LIWC counts (psycholinguistic categories)
- Topics from LDA model
- User graph features
Create a time series for each metric and subreddit with daily values

Create the difference \( d_{mh} \) between the mental health series \( s_{mh} \) and control series \( s_c \):

\[
d_{mh} = s_{mh} - \frac{1}{\text{control}} \sum_{c} s_c
\]

Use prophet time series model and intervention analysis techniques

To what extent is COVID-19 discussed on Reddit?
Discussion increased in March, as the virus began having more impact on the US. COVID-19 is discussed more on mental health subreddits, especially r/Anxiety.

Has COVID-19 led to changes in engagement and social interaction?
Activity levels drop on most mental health subreddits relative to controls, which could indicate less need for support or more withdrawal from social situations.

r/Anxiety comments increase with the presence of COVID-19 megathreads. Density increases, indicating more connectedness between users.

<table>
<thead>
<tr>
<th>Work (posts)</th>
<th>Money (comments)</th>
<th>Transport and daily life (posts)</th>
<th>Affect (comments)</th>
<th>Information sharing (posts)</th>
<th>Death (posts)</th>
<th>Medical treatment (comments)</th>
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<tbody>
<tr>
<td>[Graph]</td>
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Row 1: Economic concerns may lead to an increase in discussion of money; a decrease in discussion of work goes along with a decrease in ordinary events (transport and daily life).
Row 2: Content shifted towards sharing information instead of emotions. The information sharing topic includes words like “hope”, which along with the increase in “we” are indicative of collective coping.
Row 3: We see some increase in discussion of anxiety and death; we see a decrease in medical treatment, indicating lack of treatment options during the pandemic.

The results sometimes differ between posts and comments, and we show examples with both.

Have changes in conversations spurred by COVID-19 been different in mental health subreddits?

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