

Trends in Factors Surrounding Mental Health in Singapore: An Observational Text Mining Study from Reddit Forums

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Trends in Factors Surrounding Mental Health in Singapore: An Observational Text Mining Study from Reddit Forums

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Abstract

Text mining of mental health-related posts from Singapore-based Reddit communities uncovered ten themes, with (1) loneliness, (2) access to affordable mental health care, and (3) education challenges emerging as the most prevalent, while temporal analysis revealed a rise in discussions on social isolation and emotional struggles, as well as on access to mental health support and services.

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Original Manuscript

Research Letter

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Trends in Factors Surrounding Mental Health in Singapore: An Observational Text Mining Study from Reddit Forums

Abstract

Text mining of mental health-related posts from Singapore-based Reddit communities uncovered ten themes, with (1) loneliness, (2) access to affordable mental health care, and (3) education challenges emerging as the most prevalent, while temporal analysis revealed a rise in discussions on social isolation and emotional struggles, as well as on access to mental health support and services.

Keywords: Mental health, Online Forums, Social Media Mining, Text Mining, Singapore

Introduction

A 2023 survey found that 46% of Singaporeans viewed mental health problems as the top health challenge [1], while a 2023 national survey reported significant increases in poor mental health among young adults compared to six years earlier [2]. These findings highlight the urgent need for effective interventions and policies.

In response to rising mental health concerns, a recently launched white paper [3] outlined recommendations, including strengthened policies, enhanced stakeholder collaboration, public awareness campaigns and regular publication of data on suicide determinants. However, specifics surrounding the implementation of these recommendations was primarily from household surveys sampled from residential addresses, which may struggle to capture real-time mental health needs.

We henceforth leverage online forums to capture real-time mental health concerns, offering a complementary up-to-date knowledge base on prevailing factors of mental health in Singapore. This could henceforth assist practitioners and policy stakeholders in refining their approach and disseminating targeted recommendations.

Methods

Reddit posts spanning January 2015 to December 2022 were retrieved from four Singapore-based subreddits – r/askSingapore, r/singapore, r/singaporeR, and r/singaporeRaw.

Chain-of-thought prompting [4] first identified posts relevant to mental health. Dynamic BERTopic [5] was then used to uncover topics and track their evolution over time, allowing us to observe topical shifts in discussions of mental health across different years. Finally, Linguistic Inquiry and

Word Count [6] generated psychological insights among the posts for each identified topic.

Results

0.73% (2,783/379,787) posts from the four sub-reddits were identified as mental health related. The BERTopic analysis uncovered 10 distinct key topics (Table 1), which can be grouped into several categories: (1) *social isolation and emotional struggles*, such as loneliness (Topic 0) and relationship challenges (Topic 8); (2) *access and support to services*, including affordability (Topic 1) and assistance in dealing with depressive symptoms (Topic 5); (3) *career and education pressures* (Topics 2, 3, and 6); and (4) *tragedies from personal and global events*, such as assaults (Topic 7) or COVID-19 (Topic 4).

Table 1. List of topics identified from BERTopic

Topic	Count	Topic Keywords	Interpretation	Representative Text	Categories
0	241	loneliness, like, sad, destined	Loneliness	"Is it normal to feel unlovable... was previously ok w making friends w my friends... but ... feeling lonely and depressed "	Social Isolation & Emotional Struggles
1	229	imh ^a , help, affordable, bipolar	Access to affordable mental health care	"... anyone know where I can find affordable therapy in Singapore? I would prefer private therapists or NGOs, not referrals from polyclinics or IMH... I'm looking for help with anxiety ..."	Access & Support to Services
2	136	poly, gpa, secondary, fresh ^b	School-related Struggles	How to transfer to another secondary school ... I don't feel accepted here... My grades are mediocre... My score is miserable... I really hate my life...	Career & Education Pressures
3	126	internship, sg, just, resignation	Career-related Struggles	"Anxiety and stressed about work... I get so anxious and stressed about working, whether I am able to do what I am told or	Career & Education Pressures

				also able to understand and deliver on my own... "	
4	126	coronavirus, migrant ^c , measures, Pfizer	COVID-19	"Who here is feel burn out and slightly depressed because of covid..."	Tragedies from Personal & Global Events
5	86	attacks, eating, ptsd, antidepressants	Symptoms of Depression	"Anxiety attacks support... looking for someone to talk to about anxiety attack"	Access & Support to Services
6	82	pes, nsf, bunk, depression ^d	Struggles with Military (National) Service	"Downing PES status... been in the army for about six months now... been undergoing bouts of depression... been having suicidal ideations ... should i tell my commanders/ MO..."	Career & Education Pressures
7	36	heard, shes, assaulted, families	Family Assault	[Traumatic personal experience of assault]	Tragedies from Personal & Global Events
8	24	breakup, attachment, unavailable, sensitive	Relationship challenges	"How to deal with breakup... Just broke up with my gf recently, it hurts so bad ... my mechanism with dealing with such depressing problem is actually unhealthy..."	Social Isolation & Emotion Struggles
9	10	scam, valuing, transactions, ocbc ^e	Scam incidents	"Just got scammed.... but too scared to go to the police to get help... I have been in a weirdly long manic episode... "	Tragedies from Personal & Global Events
-1	1687	man, help, singaporeans	<i>Outlier</i>	<i>Outlier</i>	<i>Outlier</i>

^aInstitute of Mental Health (IMH) is the only tertiary hospital in Singapore specializing in psychiatry

^bPoly is slang for Polytechnic; Secondary is slang for Secondary School

^cReferring to COVID-19 outbreaks which took place in migrant dormitories.

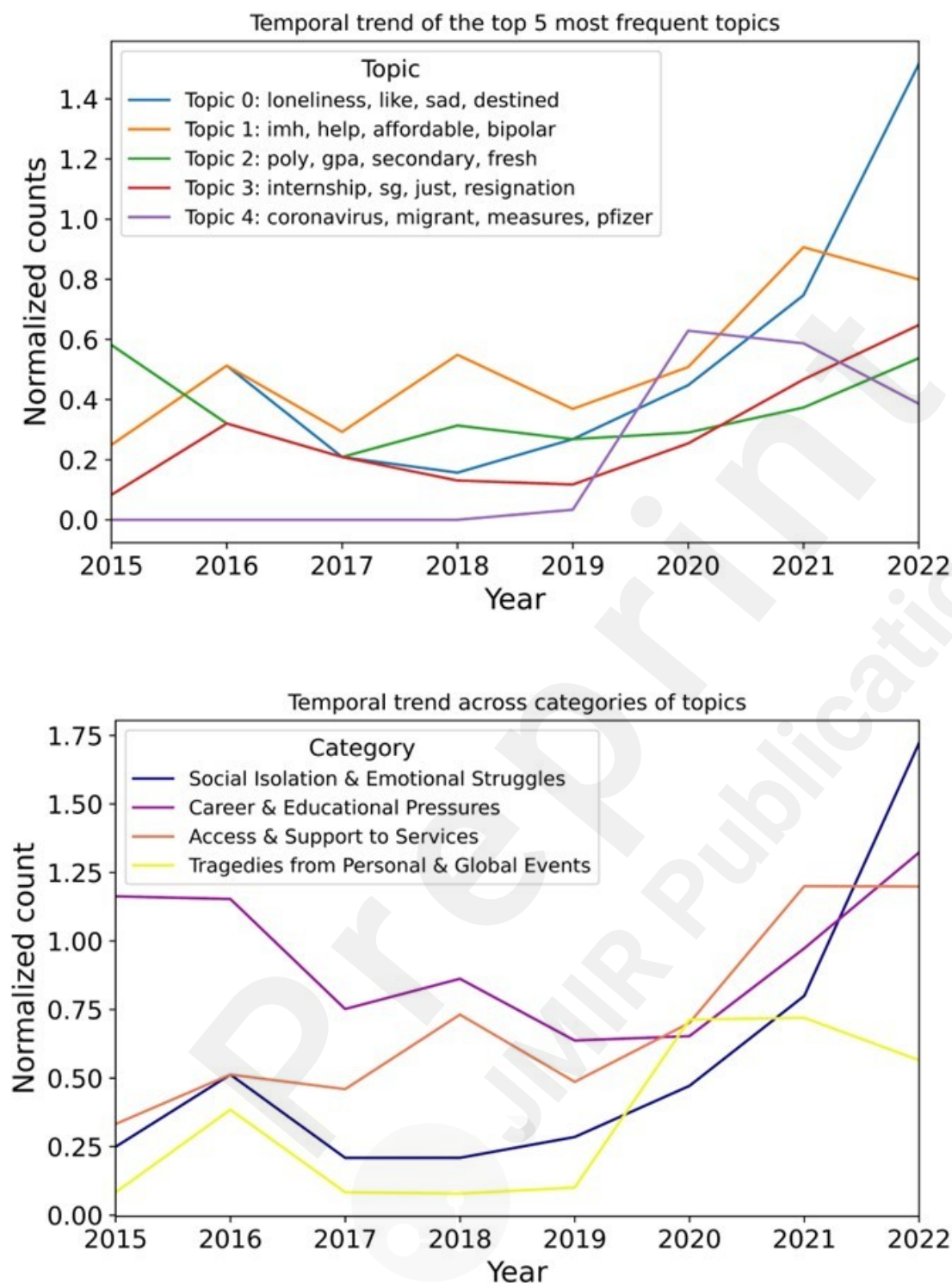
^dPhysical Employment Standard (PES) is used to determine an individual's military service vocation based their medical fitness and condition; Full-time National Serviceman (NSF) refers to individuals serving mandatory 2-year military service.

^eOversea-Chinese Banking Corporation (OCBC) is one of the largest local banks in Singapore.

Trends-wise, among the five most prominent topics, (Figure 1) suggests that loneliness (Topic 0) has been on an exponential rise since 2019, while assistance with affordable care (Topic 1) has steadily increased in the same period. Conversely, discussions surrounding COVID-19 (Topic 4) declined after 2020, likely due to a return to normalcy. Meanwhile, school and career-related struggles (Topics 2 and 3) have fluctuated since 2015 but appear to have been on the rise since 2019.

Among the categories, topics related to "Social Isolation and Emotional Struggles" and "Access and Support to Services" are on the rise, with the former increasing exponentially since 2017. Conversely, topics related to "Career and Education Pressures" and "Tragedies from Personal and Global Events" have fluctuated since 2015.

Figure 1. Temporal trends of the most frequent topics (top) and topic categories (bottom). Counts are normalized as $\frac{(\text{documents} \in \text{topics})_t}{(\text{documents across all}_{-reddits})_t}$ where t represents the year, to account for changes in Reddit's popularity among Singaporeans over time.



Linguistic Inquiry and Word Count reveals largely homogeneous distributions across topics in terms of psychological states and motives, with most attributes falling at or below the average levels observed in the broader Reddit corpus, except for “allure”, as detailed in (Multimedia Appendix 1). For “allure”, a divergence is observed: topics such as COVID-19 (Topic 4), symptoms of depression (Topic 5), and national service (Topic 6) fall substantially below the Reddit average, while most remaining topics show slightly elevated levels.

Discussion

While national household surveys offer structured demographic representation, they are prone to social desirability bias, with respondents potentially downplaying mental health struggles. Although Reddit data has limitations, such as demographic bias and challenges in delineating cultural nuances, it captures authentic discussions from experiences shared in anonymous online spaces, uncovering needs that may be overlooked. Our results hence provide valuable insights for practitioners and policymakers to design informed strategies catered to public health needs.

For instance, our findings on the recent rise in loneliness (Topic 0) and concerns about affordable services (Topic 1) inform: awareness campaigns emphasizing social isolation or promoting cost-effective treatment; leveraging technologies to facilitate affordable care; and coordinating with stakeholders, including families and communities, to promote socialization. While career and school-related struggles have fluctuated (Topics 2 and 3), their overall prevalence highlights the need to sustain efforts such as providing access to trained counselors in these environments.

These findings could also be trickled down to a micro-level. For example, addressing concerns of affordability (Topic 0) could assist clinics in reducing the high treatment gaps [7], whilst prevailing factors like loneliness (Topic 1) could assist counsellors in understanding root-causes for tailored interventions. Practitioners could also leverage insights from our Linguistic Inquiry and Word Count analysis. For instance, above-average allure among most topics, except for COVID-19 (Topic 4) and national service (Topic 6), may reflect attractiveness driven by societal expectations.

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Conflicts of Interest

None declared

Abbreviations

COVID-19: Coronavirus disease 2019

GPA: Grade Point Average

IMH: Institute of Mental Health

NSF: Full-time National Serviceman

OCBC: Oversea-Chinese Banking Corporation

PES: Physical Employment Standard

SG: Singapore

Data Availability

Data is publicly available via the Open Science Framework at <https://doi.org/10.17605/OSF.IO/XBMN5>. Codes are publicly available at GitHub at https://github.com/cja5553/Mental_Health_SG_forums.

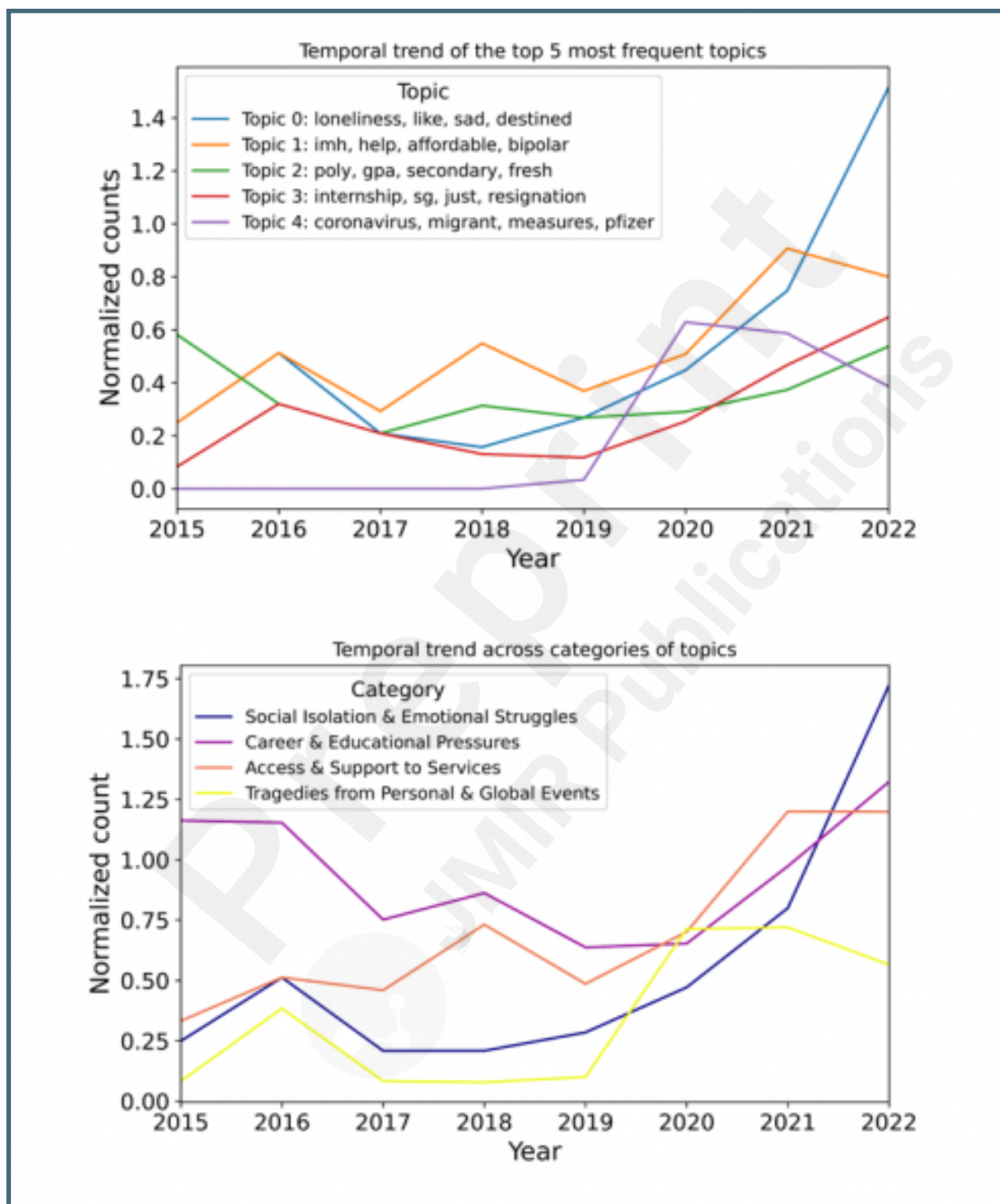
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Supplementary Files

Figures

Temporal trends of the most frequent topics (top) and topic categories (bottom). Counts are normalized as $(\# \text{ documents in topics})_t / (\# \text{ documents across all sub-reddits})_t$ where t represents the year, to account for changes in Reddit's popularity among Singaporeans over time.



Multimedia Appendixes

Supplementary Results.

URL: <http://asset.jmir.pub/assets/a09d8cc1677b633f0358e04e88eaf128.docx>

