

Anita CIUNOVA-SHULESKA*
Nikolina PALAMIDOVSKA-STERJADOVSKA**
Kimberly A. PARKER***
Sarah A. GEEGAN****
Anne Amegbeha AMISSAH*****

University Communication About Mental Health Amid the Twin Pandemics: Text Mining and Sentiment Analysis

Abstract

Analyzing past universities' mental health communications to identify dominant themes and tone is crucial for improving future strategies. However, existing research has largely neglected this study area. Rooted in the framing theory and ethics of care, this paper aims to provide insights into the structure and tone of US universities' written communication regarding student mental health amid the twin pandemics. The analysis focused on 1405 messages sent by university presidents to students from January 2016 to December 2022, divided into periods before and during the twin pandemics. Text mining and sentiment analysis assessed the content and tone of these messages. Topic analysis revealed eight topics in communication before and ten topics during the twin pandemics, with "counseling support," "violence," and "life loss" appearing in both periods. US universities communicated with a neutral tone in both periods. The research recommends prioritizing counseling support and addressing issues like violence, and loss for enhanced student services. It provides a foundation for understanding universities' responses to mental health challenges, emphasizing the importance of ongoing assessment and adjustment of communication strategies for enhancing student mental health support. As universities are crucial for student well-being, discussions should reflect evolving changes and emerging issues.

Keywords: student mental health, university communication, twin pandemics, text mining, sentiment analysis

* Ss. Cyril and Methodius University in Skopje, North Macedonia, anita@eccf.ukim.edu.mk, ORCID: 0000-0001-6402-7630 (corresponding author)

** Ss. Cyril and Methodius University in Skopje, North Macedonia, nikolina@eccf.ukim.edu.mk, ORCID: 0000-0002-2926-5649

*** Department of Integrated Strategic Communication, University of Kentucky, kimberly.a.parker@uky.edu, ORCID: 0000-0002-8101-9226

**** Department of Integrated Strategic Communication, University of Kentucky, sarah.geegan@uky.edu, ORCID: 0000-0003-4538-184X

***** Department of Integrated Strategic Communication, University of Kentucky, anne.amegbeha@uky.edu, ORCID: 0009-0008-3728-1682

1. Introduction

Universities play a crucial role in supporting student mental health by providing accessible, stigma-free mental health services on campus. Early intervention and proactive support are essential, as they encourage help-seeking and foster a culture of openness around mental health (Kitzrow, 2003; Kim et al., 2011; Browne et al., 2017). Research shows that effective mental health communication can improve student well-being by raising awareness and increasing the likelihood of students seeking help when needed (Doblyte & Jiménez-Mejías, 2017; Pace et al., 2018; Lipson et al., 2019). This support aligns with universities' duty as caring communities, helping to destigmatize mental health issues and ensuring students know about available resources (Mitchell & Ortega, 2019; Johnson et al., 2022; Kayyali, 2022). Moreover, scholars advocate for strategic campus communication to prioritize mental health, as it can raise awareness, promote resources, and normalize help-seeking, particularly through peer support (Hunt & Eisenberg, 2010; Remskar et al., 2022; Wiedermann et al., 2023).

University mental health communication is arguably even more important during periods of pronounced conflict, hardship, or catastrophe (Singh et al., 2022). In recent history, the period between 2020 and 2022 presented a swarm of circumstances that triggered anxiety across the national stage, including but not limited to the COVID-19 pandemic and the death of George Floyd. Indeed, scholars and higher education officials referred to this period in America as one with *twin pandemics*, a virus threatening physical harm, and a national reckoning with systemic racism (Hershberg & Sandmeyer, 2021).

Against this backdrop, Healthy Minds Network (2021) found an increase in diagnosed mental health conditions among US students, with reports indicating that around 25% of students in 2019-2020 reported depression, and about 28% reported anxiety. Suicidal ideation also grew over this period, with approximately 14% of students in 2020 indicating they had seriously considered suicide in the past year, a rise from earlier years. By 2020, intensified by the pandemic, up to 48% of students were experiencing moderate-to-severe depression, and 38% had moderate-to-severe anxiety. In 2023, more than 35% of college students in the US reported severe anxiety during the previous year, and 27% reported experiencing depression, according to a survey by the American College Health Association (2023).

Given these considerations, universities must facilitate open communication on mental health by serving as a reliable source of accurate and relevant information about various crises and situations to the entire campus community. This approach can help prevent the spread of misinformation, enhance understanding of mental health issues, and reduce anxiety and other mental health problems among students (Chang et al., 2020; Zapata-Ospina et al., 2021). Previous studies have explored various aspects of student mental health, including the prevalence of mental health issues on campus, the barriers to seeking help, and the effectiveness of mental health interventions and resources (Hunt & Eisenberg, 2010; Arday, 2018; El Morr et al., 2020). Some studies have also focused on service delivery outcomes or stigma reduction (Masuda & Boone, 2011; Hunt et al., 2010; Bourdon et al., 2020; Ittefaq & Reynolds-Tylus, 2024). Considering the significant focus on student mental health and the impact of effective support and stigma reduction, researchers have also turned their attention to how universities communicate during crises, an area that remains critical yet underexplored (Gigliotti, 2016; Moerschell & Novak, 2020).

Grounded in the ethic of care perspective (Simola, 2003) and framing theory (Entman, 1993), this study analyzes how universities frame mental health messages to reflect ethical

care principles, supporting students' well-being and fostering a sense of community in times of crisis. This study combines topic and sentiment analyses to bridge the gap between understanding what is communicated and how it is communicated during the period marked by a series of crises, each with varying severity, durations, and unique impacts on students and society. It is the first comprehensive analysis of the content and emotional tone of mental health communications from U.S. universities, providing a clearer view of the overall communication in terms of how communication structure and tone evolved throughout time. By examining both the messages conveyed and their emotional tones, this research provides valuable insights into the overall university communication landscape. It highlights the importance of university effective and adaptive messaging in student outreach during times of pronounced crisis. Additionally, it shows how these strategies can be adjusted for future challenges.

2. The Twin Pandemics and the Role of University Mental Health Communication

As emphasized by scholars in the years leading up to 2020, there has been a growing recognition of the importance of supporting mental health in academic settings (Kestel et al., 2022; Singh et al., 2022; World Health Organization, 2023). Research has shown a high prevalence of mental health issues among college students, such as depression, anxiety, and stress-related disorders, which can have a significant impact on overall well-being, academic performance, social relationships, and long-term life outcomes (Eisenberg et al., 2007; Pedrelli et al., 2015; Mitchell & Ortega, 2019). In this line, studies have found that mental health challenges can affect students' cognitive functions, concentration, and motivation, leading to lower GPAs for those with depression and difficulties in test performance and class participation for those with anxiety disorders (Hysenbegasi et al., 2005; Eisenberg et al., 2009; Salimi et al., 2023). Additionally, mental health conditions can strain social relationships, leading to feelings of isolation and exacerbating the students' conditions (Prince, 2015).

Given the importance of supporting mental health and well-being among students, universities must be proactive in addressing mental health to meet the evolving needs of their community during times of crisis. The years described as twin pandemics (Hershberg & Sandmeyer, 2021) brought significant disruptions and challenges for higher education institutions. Studies have shown increased levels of anxiety, depression, fatigue, and distress among college students during the pandemic, as well as heightened emotions of sadness and anger in the general population following George Floyd's murder (Eichstaedt et al., 2021; Elharake et al., 2022).

Moreover, the COVID-19 pandemic has significantly changed mental health discussions, with research by Panchal and collaborators (2020) and Jan (2021) revealing a significant increase in mental health concerns and demand for mental health services among individuals experiencing pandemic-related stressors. The pandemic, engendering a global atmosphere of uncertainty and stress, amplified conversations about mental health in the public sphere, prompting universities to adopt an ethic of care approach in their crisis communication. This approach is designed to address the emotional and interpersonal needs of the university community through transparency, honesty, and the provision of resources and support (Simola 2003; Bauman, 2011). By modifying decisions, actions, and communication to address these needs, universities can cultivate a sense of trust and compassion among all community mem-

bers (Keeling, 2014). Also, universities enhance their communication effectiveness by thoughtfully framing their messages and emphasizing key aspects of reality (Reese, 2001; Kuan et al., 2021). Framing theory, widely used in mass communication and public relations (Scheufele, 2004), explores how different frames can influence audience attitudes and behavior. Research on crisis communication framing has shown how universities can shape messages to educate, reassure, stimulate action, and build trust during difficult times (Suarez, 2022; Sørensen & Evensen, 2023).

Additionally, the COVID-19 pandemic has accelerated openness to discussions about mental health, as indicated by research showing increased willingness among the public to address mental health issues (Czeisler et al., 2020). This shift has been accompanied by a reduction in the stigma surrounding mental health, with more individuals sharing personal experiences with stress, anxiety, and depression (Brooks et al., 2020). Despite this progress, surveys, and research (Hunt & Eisenberg, 2010; Son et al., 2020; Liu et al., 2020; Conrad et al., 2021) suggest that there remains a gap between the demand for mental health resources and the perceived sufficiency of resources provided by universities, particularly during periods of crisis. In light of these findings, this study aims to explore how university mental health communication has evolved before and during the twin pandemics, incorporating an ethic of care approach and effective framing strategies for crisis communication. As such, the following research questions are proposed:

RQ1: What are the main topics discussed by the universities for maintaining students' mental health before and during the twin pandemics?

RQ2: What is the sentiment of the universities' communication with students before, and during the twin pandemics?

3. Methods

3.1. Data

The research team utilized email communication from university presidents at 233 out of 500 top universities in the US, as listed in the "Best National University Rankings" from US News and World Report. For all 500 of these universities, the research team examined the president's office website for databases of campus emails that had been distributed from the university president to either students or the entire university community, from 2016 to 2020. Only 233 of these 500 universities did, in fact, publish these archived emails. These universities represented 49 US states (all except South Dakota) and Washington DC. Afterward, the research team read every archived email available on those websites. The messages included in this study's analysis were selected using the criteria of mental health language and mental-health-related topics. Emails meeting these criteria were included in the data set.

The data was divided into two subsets based on the events of 2020, the COVID-19 pandemic and the tragic killing of George Floyd. The first period covers January 2016 to February 2nd, 2020 (before the twin pandemics), with 354 messages, while the second period spans from February 3rd, 2020 to December 2022 (during the twin pandemics), with 1051 messages. The cutoff date of February 3rd, 2020 was chosen due to the US declaring a Public Health Emergency for COVID-19 (American Journal of Managed Care, 2021). After pre-processing the 354 messages sent to the students for the first period, 49305 words and 2241 unique words

were identified, whereas after pre-processing the 1051 documents for the second period, 184412 words and 4554 unique words were identified. Word frequency helps identify the main themes in a text, as more frequent words are more relevant to the topic. Unique words aid in distinguishing sentiments, allowing algorithms to assess emotional tone and improve sentiment classification accuracy.

Further, the cloud-based text mining application MineMytext (www.minemytext.com) for topic modeling, was used to discover and visualize the main topics and sentiments in the two periods.

3.2. Text Mining Methodology and Topic Modeling

The topic classification model known as Latent Dirichlet Allocation (LDA) is used through MineMyText for extracting semantically meaningful topics from text and categorizing the content in a completely automated, data-driven manner. The main idea behind this model is that each document is made up of a set of topics with varying proportions, and each topic is a combination of words with varying probabilities. Given that LDA is an unsupervised machine learning algorithm, the identified topics are completely data-driven from the text messages imported to the cloud-based text mining application, i.e., MineMyText application.

We applied LDA since it has been used in communication research such as political speeches (Baum, 2012); newspaper articles (DiMaggio et al., 2013; Bonilla & Grimmer, 2013; Puschmann & Scheffler, 2016), social media and blogs (Parra et al., 2016; Elgesem et al., 2016; Hacker et al., 2020), regulatory comments (Levy & Franklin, 2014), monetary policy statements (Luangaram & Wongwachara, 2017; Ciunova-Shuleska et al., 2024), research articles in media and communication (Maier et al., 2021), as well as in the research related to mental health (Tai et al., 2015; Xue et al., 2020; Zhang, 2020). Besides the use of the MineMyText tool in various fields such as business process management (vom Brocke et al., 2016), e-government (Ogonek, 2017), online company reviews (Schmiedel et al., 2019), customer service management (Dreesen & Diegmann, 2017), etc., this tool has been used for analyzing topics related to mental health as well (Hacker et al., 2020).

Following the procedure proposed by Debortoli and collaborators (2016), we have undertaken the following pre-processing steps:

- Setting n-gram to one, meaning that the words were split into single units (one word at a time);
- Deciding on removing the stop words, i.e., standard frequent but uninformative words, such as “dear”, “also”, “university”, “student”, or “many”, besides standard English stop words (“and”, “or”, “the” etc.);
- Lemmatizing – the algorithmic process of reducing the words to the dictionary form of a word based on its intended meaning to avoid the repeated appearance of a single word, e.g., singular and plural of the same word;
- Stemming – the process of reducing inflected (or sometimes derived) words to their word stem, base, or root form), and removing terms that only consist of digits.

Next, we estimated the model at the message level, deciding on the number of topics. The optimal number of topics depends on the size and diversity of the corpus; therefore, we experimented with different topic numbers, ranging from 5 to 50. The results for the two periods are presented below.

3.2. Measuring Tone using a Dictionary-based Method

The process of analyzing the text data to identify whether the text is positive, negative, or neutral is known as sentiment analysis. Sentiment analysis is a text-mining technique for analyzing emotions in a text corpus (Pang & Lee, 2008), i.e., for extracting subjectivity from the text (Taboada et al., 2011). Dictionary-based methods (Thelwall et al., 2010; Taboada et al., 2011) and machine learning-based methods (Pang et al., 2002) are two approaches for sentiment analysis. In the present study, we applied a dictionary-based method that relies on large collections of words with prior polarity (Calefato et al., 2018). Dictionary-based methods for sentiment analysis have been used in prior research (Thelwall, 2017), including those related to mental health issues from COVID-19 (Okango & Mwambi, 2022).

We used the SentiStrength dictionary-based tool (Thelwall et al., 2010) that is incorporated into the MineMytext application (Debortoli et al., 2016). This tool can evaluate the degree of messages' positivity or negativity using a dual scale – e.g., 1 (no positivity) to – 5 (strong positivity) and -1 (no negativity) to -5 (strong negativity) – which is founded on the psychological assumptions that humans' emotions can be both positive and negative at the same time (Norman et al., 2011). Because texts often contain a mix of positive and negative sentiments (Thelwall et al. 2010), the Minemytext application can simultaneously extract positive and negative sentiments along with the strength of the sentiment expressed.

More precisely, an assessment of the sentiment orientation is done by calculating the Average SentiStrength score of text as the sum of positive and negative SentiStrength scores. Further, the Average SentiStrength score at the message level was multiplied by the estimated proportion of the extracted topic obtained from LDA using the following formula:

$$\text{Net tone} = \text{Share of topic proportion} * \text{Average Senti Strength score}$$

Thus, the sentiment for each of the identified topics and across the years was calculated for each of the analyzed periods.

4. Results

4.1. Topic Analysis Results

After setting the parameters before conducting the analysis, we performed multiple iterations for the most suitable number of topics to be extracted, thus avoiding an excessive number of useless topics with too much similarity or a too small number of topics with too broad meanings (Debortoli et al., 2016; Gan & Qi, 2021), following the criteria set by Bouma (2009) and Lau and collaborators (2014). We started with 50 topics, and after testing and evaluating a different number of topics, we settled on eight topics for the first period and ten topics for the second period. We determined that models with eight or ten topics yielded the most distinct and well-differentiated themes, compared to models with fewer or more topics. For further details on the topic modeling process, see Debortoli et al. (2016). The ten words with the highest frequency for each of the extracted topics in the first and second periods along with the word clouds per topic for the first period and for the second period are shown in the Appendix section.

Next, we labeled the extracted topics based on the stemmed words with the highest probability for both periods. The topic analysis also revealed the probabilities of all identified topics for each period, presented in Table 1.

As shown in Table 1, Topic 4 („inclusiveness/value/diversity“), Topic 2 („counseling support“) and Topic 3 („violence“) account for more than 55% of the universities’ mental health discussions, indicating that these three topics gained the most attention and discussion by the universities in the first period. Universities prioritized discussions about acceptance and valuing of diverse backgrounds and experiences, inclusiveness, which fosters a sense of belonging, and counseling support to provide students with necessary resources for coping with mental health issues. Moreover, universities addressed violence as a topic to provide support for those affected by violence, recognizing its significant impact on mental health outcomes. The topics “police/safety/incidents”, “family/friend loss”, “immigration/DACA”, “sexual misconduct” and “natural disasters” underscore the multifaceted challenges students face, highlighting the universities’ awareness and readiness to address broader social and environmental factors through a mental health lens.

Table 1. Distribution of topics over the complete collection for both periods

Topics	Topic labels	Probability %
First period		
Topic 1	Police/safety/incidents	10.0
Topic 2	Counseling support	18.4
Topic 3	Violence	15.9
Topic 4	Inclusiveness/value/diversity	22.4
Topic 5	Sexual misconduct	8.2
Topic 6	Natural disasters	7.1
Topic 7	Family/friend loss	9.8
Topic 8	Immigration/DACA	8.2
Second period		
Topic 1	Juneteenth	5.2
Topic 2	Counseling support service	16.0
Topic 3	Violence toward Asians and Asian Americans	10.6
Topic 4	National election	15.6
Topic 5	Ukraine	4.6
Topic 6	Racism/George Floyd	14.8
Topic 7	Covid	7.4
Topic 8	Loss of life	9.6
Topic 9	Women’s health	4.1
Topic 10	Commitments for education, diversity, and support of black people	12.2

Regarding the second period, Topic 2 („counseling support service“), Topic 4 („national election“), and Topic 6 („racism/George Floyd“) account for nearly half of the discussions

with students about mental health, reflecting the profound impact of the 2020 U.S. elections and the death of George Floyd on the societal and political discourse. The 2020 presidential election generated intense emotions and engagement among voters, underscoring the deep political divisions in the country. This period marked a critical moment of social change and political engagement, prompting universities to reassess their roles in promoting diversity and mental health support. The death of George Floyd in 2020 sparked widespread protests against systemic racism and police brutality, profoundly influencing students and society by fostering a renewed commitment to social justice, equality, and the urgent need for inclusive policies within educational institutions and beyond. Also, there is the ongoing relevance of counseling support offered to the students as continuous access to counseling is essential for maintaining good mental health among students.

The topics “commitments for education, diversity, and support of black people”, “violence toward Asians and Asian Americans”, “loss of life”, “Covid”, “Juneteenth”, “Ukraine”, and “women’s health” are discussed less frequently than the top three topics but remain crucial for students’ mental health. For instance, the rise in anti-Asian hate crimes during the pandemic has been linked to increased anxiety and depression among Asian American students, highlighting the need for supportive mental health resources tailored to these experiences (Jan, 2021). Similarly, discussions on diversity and support for marginalized communities are crucial for fostering an inclusive campus environment that addresses the mental health needs of all students (Forbes et al., 2023; Huynh et al., 2023).

Comparing the topics in both periods, it is evident that there are shared topics of “counseling support”, “violence”, and “loss of life”. These recurring topics indicate consistency in communication regarding critical issues affecting students across both time frames. However, the diverse nature of other topics suggests a shift in the emphasis of communication during the second period compared to the first. These observations indicate that discussions have evolved, reflecting changing dynamics and emerging challenges that may significantly impact students’ mental health and well-being, while still maintaining a focus on the three most important topics present in both periods. In summary, these findings demonstrate universities’ awareness of the complexities surrounding mental health and highlight the necessity for a holistic approach to effectively support students.

4.2. Sentiment Analysis Results

The sentiment analysis performed on the messages sent to students in the first period revealed that the sentiment used in the communication with students across eight identified topics is neutral and ranges from -0.205 to -0.042. This indicates that universities used thoughtfully chosen language, demonstrating a sense of responsibility to ensure that the message is conveyed clearly and accurately, while also minimizing showing emotions as much as possible. In general, the communication practices used by universities during this period are below 0 but still fall within the range of neutral communication, which is between -1 and +1. Namely, the average sentiment score is -0.120 with topic 2 (“counselling support” being the topic with the lowest score (-0.205) and topic 5 (“sexual misconduct”) being the topic with the highest score (-0.042) (Table 2).

The sentiment analysis performed on the messages sent to students in the second period revealed that the sentiment is neutral and ranges from -0.178 to -0.005 across 10 identified topics. This implies that universities communicated with the students using a similar sentiment level as in the first period trying to minimize expressing emotions as much as possible.

Again, the sentiment score of the communication used by universities for each of the topics and the average score of the communication covering all the topics in the second period is below 0 but within the framework of +1/-1, indicating a neutral tone of the communication (Table 2). It’s worth noting that even though neutral communication in general prioritizes explicit information over implicit cues, some individuals may perceive neutral communication as distant and cold, while others may perceive it as sufficiently warm. However, the results indicate that universities used a neutral tone in communication with students over the entire analyzed period from 2016 to 2020, which suggests a conscious effort to present information objectively. This approach aligns with Milholm’s (2022) finding that a neutral tone in news conveys facts without bias, allowing the information to stand out more clearly.

Table 2. Sentiment scores of the extracted topics for each of the two analyzed periods

Topics	Topic labels	sentiment score
First period		
Topic 1	Police/safety/incidents	-0.108
Topic 2	Counseling support	-0.205
Topic 3	Violence	-0.201
Topic 4	Inclusiveness/value/diversity	-0.173
Topic 5	Sexual misconduct	-0.042
Topic 6	Natural disasters	-0.081
Topic 7	Family/friend loss	-0.098
Topic 8	Immigration/DACA	-0.050
Average		-0.120
Second period		
Topic 1	Juneteenth	-0.029
Topic 2	Counseling support service	-0.172
Topic 3	Violence toward Asians and Asian Americans	-0.149
Topic 4	National election	-0.131
Topic 5	Ukraine	-0.041
Topic 6	Racism/George Floyd	-0.178
Topic 7	Covid	-0.038
Topic 8	Loss of life	-0.099
Topic 9	Women’s health	-0.005
Topic 10	Commitments for education, diversity and support of black people	-0.102
Average		-0.094

Different topics in both analyzed periods have exhibited distinct patterns of sentiment fluctuation.

5. Discussions

The results of the topic analysis revealed eight topics in the first period and ten in the second. Few topics such as “counseling support”, “violence”, and “life loss” were common for both periods. This could be explained by the fact that these topics are more foundational, general, and broad in scope, addressing everyday concerns. As a result, they are likely to recur in future universities’ mental health communication with students. The other topics are period-specific, indicating that period-specifics impose appropriate modifications in topics discussed with students. In the first period the most discussed topics were “inclusiveness/value/diversity”, “counseling support”, and „violence” whereas, in the second period, the focus shifted to „counseling support”, “national election”, and “racism/George Floyd.” This variation shows that the topics and proportions of the discussed topics can change over time due to emerging events and challenges. Consequently, the university’s discussion with students should reflect these changes and address new issues to better support students’ mental health (Pace et al., 2018).

Regarding the tone of communication, we found that universities used a neutral tone of communication with students on all the topics across both periods, indicating a consistent approach over time. It can be noticed that the topics that appeared in both periods, namely, “counseling support” and “violence”, have the lowest sentiment scores in both periods along with the “racism/George Floyd” topic in the second period. The findings indicate that from an ethics of care perspective, universities support students by creating a sense of community and addressing topics related to core student well-being needs alongside period-specific topics, thus adapting their messages to address real-time concerns affecting students’ mental health. This approach reflects an ethical commitment to inclusivity by acknowledging social and political events that could disproportionately impact students. Furthermore, by adapting messages to reflect both ongoing and period-specific topics that resonate with students’ experiences, university communications about mental health effectively utilize a framing perspective. This strategic framing not only highlights the responsiveness to current events and crises but also emphasizes the inclusivity and diversity in mental health discussions, fostering a supportive community for students (Suarez, 2022). Through framing strategies, universities can create a sense of unity, signaling their recognition of diverse student challenges and affirming their role as partners in supporting students’ holistic well-being (Keeling, 2014; Kuan et al., 2021).

Additionally, the identified neutral tone of communication used by the universities indicates that universities allow students to interpret information independently and more objectively, focusing on content rather than tone. This aligns with framing theory, as neutrality provides a balanced understanding of the message and fosters open, non-defensive engagement with the message (Entman, 1993; Scheufele, 2000). This neutral tone also aligns with the care of ethics, emphasizing empathy and respect by encouraging open and objective interpretation rather than guiding toward specific reactions, thus allowing the information’s significance to emerge without bias (Milholm, 2022). As suggested by Doblyte and Jiménez-Mejías (2017) and Lipson and collaborators (2019), by promoting awareness and accessibility of support services, universities can create a supportive environment that encourages students to seek help. This aligns with their responsibility to foster support and destigmatize mental health issues (Johnson et al., 2022) and prioritize mental health in communication strategies (Wiedermann et al., 2023) utilizing a neutral tone.

The study offers valuable insights into the identified topics during the two analyzed periods, shedding light on the evolving landscape of student mental health concerns. Universities can use this information to tailor their communication strategies to address these emerging topics effectively. Understanding the prevalent topics allows institutions to design more effective messages, fostering a supportive environment for students (Pace et al., 2018; Wiedermann et al., 2023). Given the ever-evolving nature of challenges and events affecting student mental health, universities must continually adapt their messaging and student outreach strategies to meet the students' changing needs. The study suggests that universities can use the identified topics as a roadmap to enhance their student support services. By prioritizing topics such as "counseling support", "violence", and "life loss", universities can provide more proactive and comprehensive mental health resources.

Additionally, understanding the recurring themes in communication allows universities to improve the effectiveness of communication. At the same time, universities should not ignore other mental health topics, thus reflecting emerging events and challenges. However, the findings emphasize the importance of faculty and staff training in recognizing and responding to student mental health concerns given that "counseling support" is the most discussed topic in both periods. In addition, student support services can improve by tailoring messaging and outreach efforts to specific challenges and needs that arise during different periods, as identified in the study.

By openly addressing mental health topics universities can reduce stigma and encourage help-seeking behavior among students (Doblyte & Jiménez-Mejías, 2017; Lipson et al., 2019). Universities can also use these findings to advocate for policy changes that prioritize mental health support on campus (Johnson et al., 2022; Singh et al., 2022). By highlighting student challenges and university responses, this study contributes to a more supportive environment within universities and enriches the broader discourse on public health and mental well-being.

6. Limitations and Future Research

Despite universities' evident efforts to adjust communication according to students' mental health issues, students still report a gap between their need for support and the resources provided by the universities (Liu et al., 2020; Conrad et al., 2021). This gap should be addressed in future academic research and university communication strategy development. Universities should consider the importance of their role not only as educational but also as supportive communities, directly shaping students' experiences (Johnson et al., 2022), especially in critical periods (Singh et al., 2022).

Future research could adopt a longitudinal approach to track how messaging strategies evolve in response to ongoing mental health challenges. A comparative analysis between different university types (public vs. private, small vs. large) and across countries could reveal variations in communication approaches.

Although the study provides valuable insights, the sample size might limit the generalizability of the findings. Furthermore, the study relied on messages available on universities' websites, which might not represent the entire spectrum of communication with students. Future studies with larger and more diverse datasets covering longer periods could offer a more comprehensive understanding of university communication practices. Additionally, topic modeling represents a powerful tool for analyzing large text corpora but demands subjective in-

terpretations by the researcher (Schmiedel et al., 2019). Furthermore, sentiment analysis results should be interpreted with caution due to limitations related to time complexity, dictionary, and domain dependency (Islam et al., 2020).

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Appendix

See Table 3, Table 4, Figure 1, Figure 2.

Table 3. Ten words with the highest frequency for each of the extracted topics in the first period.

Topics	Words									
	1	2	3	4	5	6	7	8	9	10
First period										
Topic 1	Polic	Incid	Safety	Investing	Depart	Report	inform	Public	Respons	brandei
	0.030205	0.024671	0.023519	0.016601	0.014296	0.0142956	0.013143	0.010837	0.009454	0.008301
Topic 2	Support	Assist	Avail	Counsel	Resource	Center	contact	Call	Program	health
	0.045048	0.025042	0.023363	0.022664	0.022244	0.0214046	0.018187	0.017068	0.016928	0.012731
Topic 3	Violenc	Life	Act	People	Hate	Attack	shoot	Stand	Kill	victim
	0.022695	0.019529	0.017417	0.016714	0.016362	0.0133709	0.013195	0.011084	0.009676	0.009324
Topic 4	Inclus	Valu	Divers	Respect	commit	Nation	differ	Togeth	Place	peopl
	0.016346	0.016045	0.014842	0.013638	0.011432	0.0097272	0.008223	0.008022	0.007621	0.00722
Topic 5	Sexual	report	Misconduct	Investing	Issu	include	educ	Violenc	Vice	review
	0.029774	0.016632	0.015811	0.014374	0.010472	0.0086242	0.008008	0.008008	0.007598	0.007598
Topic 6	Disast	natur	Storm	Famili	Area	impact	affect	Hurricane	effort	Relief
	0.020937	0.018278	0.015287	0.013958	0.013626	0.0129611	0.012629	0.008973	0.008641	0.008641
Topic 7	Famili	templ	Friend	Loss	Pass	thought	death	Scienc	sad	Share
	0.033323	0.024317	0.019213	0.01381	0.012309	0.011408	0.010507	0.009307	0.009307	0.008706
Topic 8	Nation	school	Immigr	Mit	daca	Educ	pray	Famili	action	Child
	0.011633	0.010921	0.010684	0.009734	0.009022	0.008547	0.008547	0.00831	0.008072	0.006885

Table 4. Ten words with the highest frequency for each of the extracted topics in the second period.

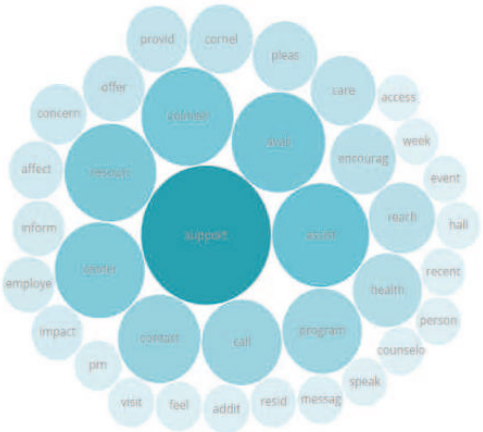
Topics	Words									
	1	2	3	4	5	6	7	8	9	10
Second period										
Topic 1	Juneteenth	June	State	Black	celebr	holiday	american	Presid	histori	Slaveri
	0.033188	0.021033	0.016935	0.015843	0.015706	0.0152964	0.014477	0.013794	0.011609	0.011609
Topic 2	Support	resourc	Service	Counsel	avail	Center	assist	Health	staff	Employe
	0.040287	0.024131	0.022013	0.019313	0.018441	0.0170702	0.01599	0.015326	0.014163	0.013872
Topic 3	Asian	Hate	Incid	American	act	Divers	violenc	Racism	discrimin	Stand
	0.025217	0.021743	0.014989	0.013573	0.013252	0.0120296	0.011965	0.010486	0.010357	0.009521
Topic 4	Nation	elect	Valu	Respect	good	democraci	state	Hope	togeth	Country
	0.01396	0.012303	0.007622	0.007539	0.007001	0.006752	0.006628	0.006628	0.006545	0.006338
Topic 5	Intern	ukrain	Support	World	ukrainian	scholar	peopl	Global	peac	Stand
	0.027379	0.024609	0.019883	0.014505	0.013364	0.01206	0.010756	0.010104	0.009615	0.009615
Topic 6	Racism	black	Floyd	Georg	justic	people	polic	System	death	Chang
	0.016927	0.015078	0.014636	0.012102	0.010977	0.0108962	0.010414	0.008645	0.008524	0.008323
Topic 7	Health	staff	Covid	Challeng	test	Inform	care	pandem	state	Class
	0.011604	0.010039	0.007236	0.006519	0.006323	0.0062581	0.005932	0.005867	0.005802	0.005606
Topic 8	Famili	Life	School	Share	rememb	Lose	pass	Love	servic	Loss
	0.021148	0.014697	0.014534	0.008737	0.008655	0.0081653	0.008084	0.007757	0.00743	0.00743
Topic 9	Health	decis	Court	Woman	state	Abort	care	suprem	rule	Provid
	0.034124	0.032012	0.024862	0.022912	0.018037	0.0164121	0.013812	0.01365	0.012512	0.012025
Topic 10	Commit	staff	Educ	Action	institut	Divers	program	support	black	Develop
	0.012391	0.009689	0.009458	0.009128	0.008898	0.0087988	0.008337	0.007711	0.007118	0.00692

Figure 1. Word clouds per topic for the first period

Topic 1 Police/safety/incidents



Topic 2 Counselling support



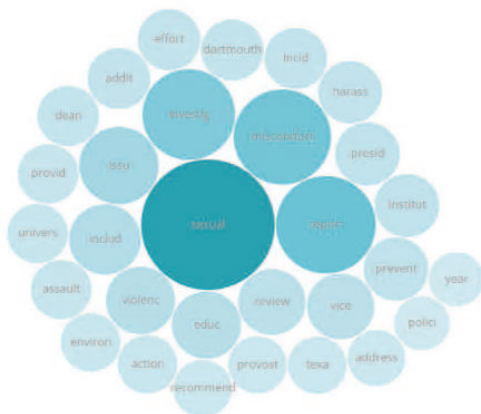
Topic 3 Violence



Topic 4 Inclusiveness/value/diversity



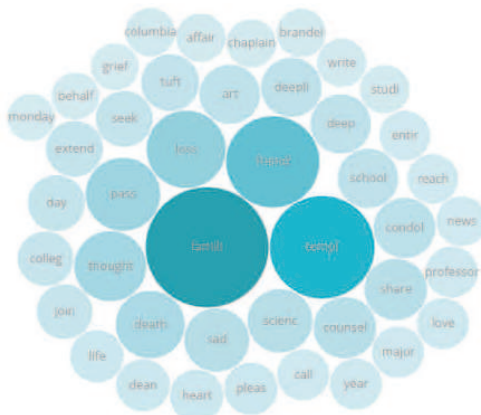
Topic 5 Sexual misconduct



Topic 6 Natural disasters



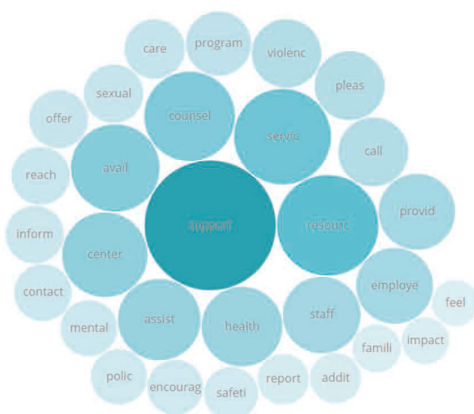
Topic 7 Family/friend loss



Topic 8 Immigration/DACA



Topic 2 Counseling support service



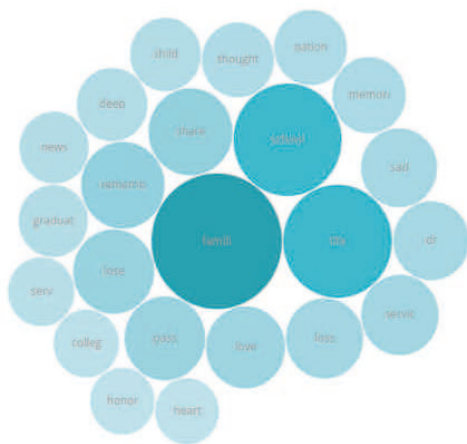
Topic 4 National election



Topic 6 Racism/George Floyd



Topic 8 Loss of life



Topic 9 Women’s health



Topic 10 Commitments for education, diversity,



and support of black people