

BUSINESS ANALYTICS CONSULTING CAPSTONE PROJECT (BAN240ZBB)

Healthcare Industry Group

Factors Affecting Employees' Mental Health at Workplace

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EXECUTIVE SUMMARY

Just like physical health, mental health is a crucial component of overall wellbeing. The projects aim to create a model that will predict whether a patient should be treated for mental illness or not. An individual's capacity to function at work can be significantly impacted by a mental health condition, which can result in decreased output, increased absenteeism, and decreased job satisfaction. Keeping the same in mind this model will allow the Analysts to know the factors responsible for Mental health at the workplace, countries affected by it and lastly, they will be able to know which age group is most affected by it. By the end of it, Business analyst will get to know how they can reduce this problem to the best of its satisfaction that is by suggesting employees to introduce more Mental health related awareness programs, therapy sessions, foster social connections, provide training and resources, and much more.

INTRODUCTION:

Mental health is a state of well-being in which an individual realizes their own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and can contribute to their community. Mental health is an important part of overall health and is a key factor in determining how people think, feel, and act. Mental health includes emotional, psychological, and social well-being, and is affected by biological, psychological, and social factors. Mental health is an important contributor to physical health and wellbeing. Mental health is intricately linked to physical health and is affected by lifestyle, environment, and other influences. Mental health is important at every stage of life, from childhood and adolescence through adulthood.

Factors Affecting Mental Health:

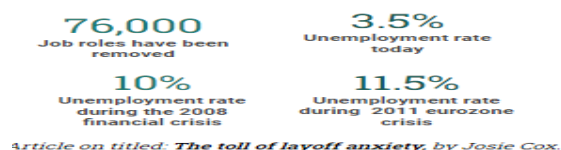
Three categories can be used to classify factors that affect mental health conditions at work:

- Factors at work: Overwork, a lack of support, and a lack of control over one's task can all contribute to stress, anxiety, and depression.

- Organizational culture: This entails elements like a lack of appreciation, inadequate communication, and a lack of respect and trust.
- Personal factors: Concerns with relationships, financial stress, and family strife can all play a role in workplace mental health issues.

LITERATURE REVIEW

In most countries today, Mental health disorders at workplace have increasingly been recognized as a problem given their high economic burden. A [BBC report](#) by Josie Cox, a journalist, released on, 6th February 2023, stated that “as companies around the globe slash positions, many workers are steeping in worry that they’re next”. Even though some of them have not been laid off, it’s the uncertainty that is the worst. Some employees are considering resigning from their current jobs but are hesitant to do so. Job security is basically a myth. As per the report, in the technology industry, companies cut more than 150,000 workers in 2022. This year alone most companies have trimmed almost 76,000 roles in the technology sector. Financial services companies such as Goldman Sachs, Morgan Stanley and Citigroup have slashed thousands of positions. Layoffs have occurred in the consumer retail, media, healthcare, and pharmaceutical spaces as well. As per the BBC report, employees are feeling a sense of **cognitive dissonance** – both those laid off, and those who are in fear of being laid off. (Cox 11).



A report titled

“Mental health at work”, by WHO (World Health Organization) released in September 2022, stated that 12 billion working days are lost every year for depression and anxiety at a cost of US \$1 trillion per year in lost productivity. 15% of working-age adults were estimated to have a mental disorder in 2019. Poor working environments,

discrimination, inequality, excessive workloads, job insecurity, layoffs, pose a huge risk to mental health of employees. (WHO report 2).

A study around Psychosocial risk (PSR) factors in the Workplace, identified by researchers at **Simon Fraser University** and validated by **CCOHS** (Canadian Centre for Occupational Health and Safety), proves that some of the organizational factors that impact organizational health, the health of individual employees and the financial bottom line, including the way work is carried out are Balance, Clear Leadership, Growth & Development, Organizational Culture, Psychological Competencies and Demands, Psychological and Social Support, Recognition & Reward. In our project, we will use our dataset and identify the major factors that affect employee's mental health at workplace. (Researchers at University 4).

An article titled “Workplace Mental Health: New Challenges, New Directions, and Best Practices”, by Mandie Conforti, Senior Director Employer and EAP Strategy at Spring Health, a software company which provides artificial intelligence platform for improving mental health at the Workplace states that \$16.3 T estimated economic output loss from 2011 – 2030 due to mental health disorders. Spring Health assists employers in modernizing their behavioral health benefits with solutions for employee mental wellbeing. They have clinically validated technology that matches each member of team to the right care from the start. The article also states that nearly 50 million American adults report having a mental illness and 50% of adults with a mental illness don't receive any treatment. (Conforti 2).



The Centre for

Addiction and Mental Health (CAMH) report on “Workplace Mental Health”, mentioned that every week at least 500,000 Canadians miss work due to mental illness. CAMH report said that Presenteeism is quiet common among employees with poor mental health. Despite being sick employees come in to work and their performance drops as a result. For instance, Depression, may interfere with employee's ability to complete physical job tasks about

20% of the time and reduce cognitive performance about 35% of the time. As per the report, about 3/4 of Canadian employees are either reluctant to admit or would not admit to their employer or colleague that they have a mental illness. (Workplace Mental Health report).

1 in 5 Canadians

21% Experience symptoms of depression, anxiety or posttraumatic stress disorder



68%

Reported a mental health issue reported that their mental health has worsened since the pandemic



30%

Disability claims are related to mental health illness



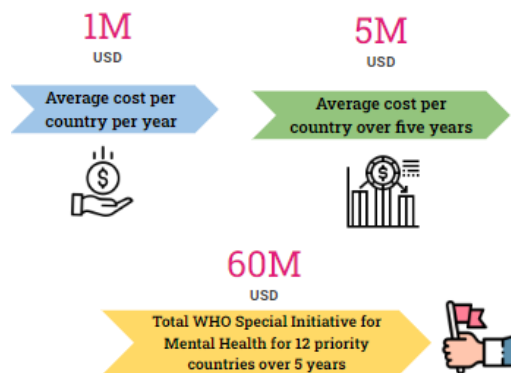
Another article “Mental Health in the Workplace” from 2021, by HRP (Human Resources Professional Association) included a survey on mental health symptoms during COVID-19. The article talks about how Economic implications of the COVID-19 pandemic have resulted in financial difficulties for many Canadians. The article stresses about how HR professionals have a key role to play in safeguarding employees and addressing mental health concerns. The association had carried out a survey which showed that 1 in 5 Canadians experience symptoms of depression, anxiety, or posttraumatic stress disorder. 68% reported a mental health issue reported that their mental health has worsened since the pandemic. 30% disability claims are related to mental health illness. Currently, only 23% of Canadians feel comfortable approaching their employer with mental health concerns. (HRP report 3).

As per Deloitte’s report on “Mental Health and Wellbeing” from 2022, one in six U.S. youth aged 6-17 experience a mental health disorder each year. Half of all lifetimes mental illness begins by age 14, and 75% by age 24. Between a quarter and half of the global population is affected by a mental health challenge at some point in their lives. 11 years Average delay between onset of mental illness symptoms & treatment. As per the report, for decades, mental health care has been tremendously under-resourced compared to physical health care. Mental health spending made up just 0.4% of global aid spending on health between 2000 and 2014. (Mental Health and Wellbeing report 5).

INDUSTRY OVERVIEW

The healthcare industry is one of the largest and most rapidly growing industries in the world. In the United States, it is estimated that the industry accounts for one-sixth of the nation's GDP, making it one of the largest contributors to the overall economy. Healthcare spending in the U.S. is expected to reach \$3.8 trillion (about \$12,000 per person in the US) in 2021. The healthcare industry is a sector of the economy that provides goods and services to treat patients with preventive, curative, promotive, and rehabilitative care. It includes a diverse range of organizations, such as hospitals, clinics, nursing homes, mental health facilities, diagnostic laboratories, physician's offices, and home health care services.

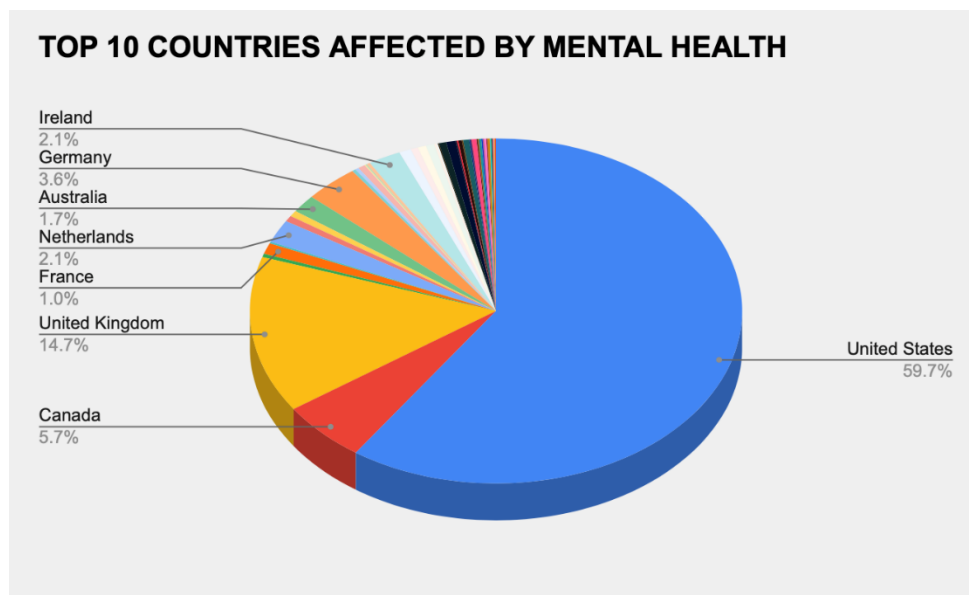
The mental health industry is a multibillion-dollar industry that focuses on providing care and support to individuals with mental health issues. It has grown significantly over the past few decades, thanks to increased public awareness and acceptance of mental health services. Mental health professionals, such as psychiatrists, psychologists, social workers, counselors, and therapists, are all part of the mental health industry. These professionals provide a wide range of services, from psychological testing and diagnosis to psychotherapy and counseling.



The mental health industry is an important part of the healthcare system, as it helps to ensure that those suffering from mental illness receive the care and support, they need. As the industry continues to grow and evolve, it will be an important part of the global healthcare system for years to come.

Mental health spending made up just 0.4% of global aid spending on health between 2000 and 2014. Low-income countries today spend an average of just 0.5% of their health budgets on mental health. Most of the money goes into hospitals that function more like asylums than treatment centers. Even though funding levels are inching up, mental health has not yet risen to a priority area on the global health agenda. During the Mental Health Week, the Minister of Mental Health and Addictions and Associate Minister of Health, announced an investment of \$12.2 million for 10 projects across Canada. Government of Canada invests \$12.2M in Mental Health Promotion in 2022

Funding is in addition to the \$6.6 million announced in 2020 under the Mental Health Promotion Innovation Fund (MHP-IF). \$ 2.5T Mental Health condition Cost the world economy in 2010.



RESEARCH METHODOLOGY/DATA COLLECTION

DATA COLLECTION PROCESS: As per our understanding Data collection is the process of gathering information from different sources and then organizing, analyzing, and interpreting it. It is often used to answer questions and solve problems in a variety of fields, such as business, science, public health, and education. We understand that data can be collected through surveys, interviews, observations, or experiments. Depending on

the research question and the resources available, the data collection process may range from simple to complex.

RESEARCH QUESTIONS, DATASET, DATA SOURCE, DATA TYPE

After doing extensive research on mental health and its effects, we discovered that working people are more vulnerable to mental illness due to a lack of a healthy work-life balance and are unable to communicate the same. Mental health is significantly impacted by the workplace and environment. So, we then decided to carry out focused research on mental health at workplaces specifically, to narrow down the dataset. Focusing on factors affecting the mental health of employees allowed us to narrow down specific research questions and research objectives. Thus, the dataset chosen includes information about workers who are employed in different industries. Following are the research questions

1. What are the factors responsible for mental health illness in the workplace?

We examined variables including age, gender, being self-employed, family history, treatment, job-related issues, remote work, working for a tech firm, benefit care alternatives, wellness programmes, leave, and having a history of mental illness to see how they may affect mental health at work. For this we have used Visualizations to provide more insights.

2. What are the top 10 countries affected by mental health illness?

Using the given variables, we will determine the top 10 countries where mental health issues are prevalent. To do this, we require a dataset that contains data on mental health issues and related variables like age, gender, location, kind of treatment, impact on employment, etc.

3. Which age group is affected by mental health the most in the workplace?

To identify the age group affected by mental health the most in the workplace, we will use the Age column and make different age groups.

DATA TYPE: We have used both Qualitative and Quantitative data. The dataset is in CSV format, and we will import it into Python using numpy and pandas libraries. For Tableau, we will upload Microsoft excel file and create necessary visualizations.

DATASET: The dataset chosen includes information about workers who are employed in technology and non-technology industries. We have taken the dataset from Kaggle website, as it is a particularly good platform where we can find real-world dataset.

Data Source: <https://www.kaggle.com/code/kairosart/machine-learning-for-mental-health-1/data>

Data scientists and machine learning enthusiasts can connect online at Kaggle. Users of Kaggle can work together, access and share datasets, use notebooks with GPU integration, and compete with other data scientists to solve data science problems.

1. **Age, Gender, Country**
2. **state:** If you live in the United States, which state or territory do you live in?
3. **self_employed:** Are you self-employed?
4. **family_history:** Do you have a family history of mental illness?
5. **treatment:** Have you sought treatment for a mental health condition?
6. **work_interfere:** If you have a mental health condition, do you feel that it interferes with your work?
7. **no_employees:** How many employees does your company or organization have?
8. **remote_work:** Do you work remotely (outside of an office) at least 50% of the time?
9. **tech_company:** Is your employer primarily a tech company/organization?
10. **benefits:** Does your employer provide mental health benefits?
11. **care_options:** Do you know the options for mental health care your employer provides?

wellness_program: Has your employer ever discussed mental health as part of an employee wellness program?

CREDITIBILITY: The original dataset is from Open Sourcing Mental Illness. All Kaggle datasets are trustworthy. By examining a dataset's upvotes or the shared notebooks that use it, you may determine how trustworthy it is. Not all Kaggle datasets, though, will be applicable to practical use cases. Kaggle is appropriate for a variety of users, from the most seasoned data scientists in the world to students interested in data science and artificial intelligence.

RESEARCH OBJECTIVE:

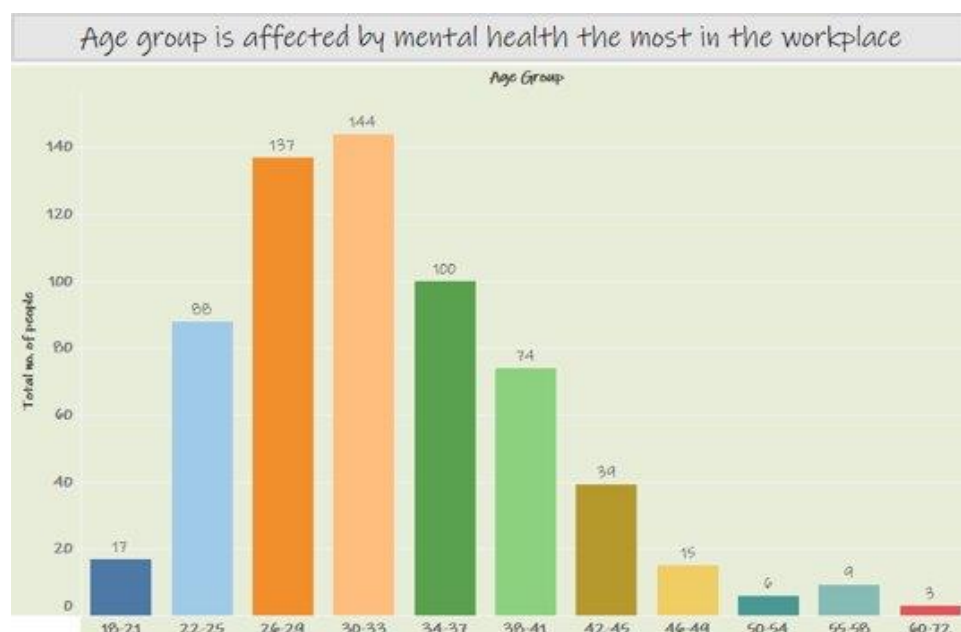
- To create a model that will predict whether a patient should be treated for mental illness or not.

RESEARCH QUESTIONS:

- What are the factors responsible for mental health illness in the workplace?
- What are the top 10 countries affected by mental health illness?
- Which age group is affected by mental health the most in the workplace?

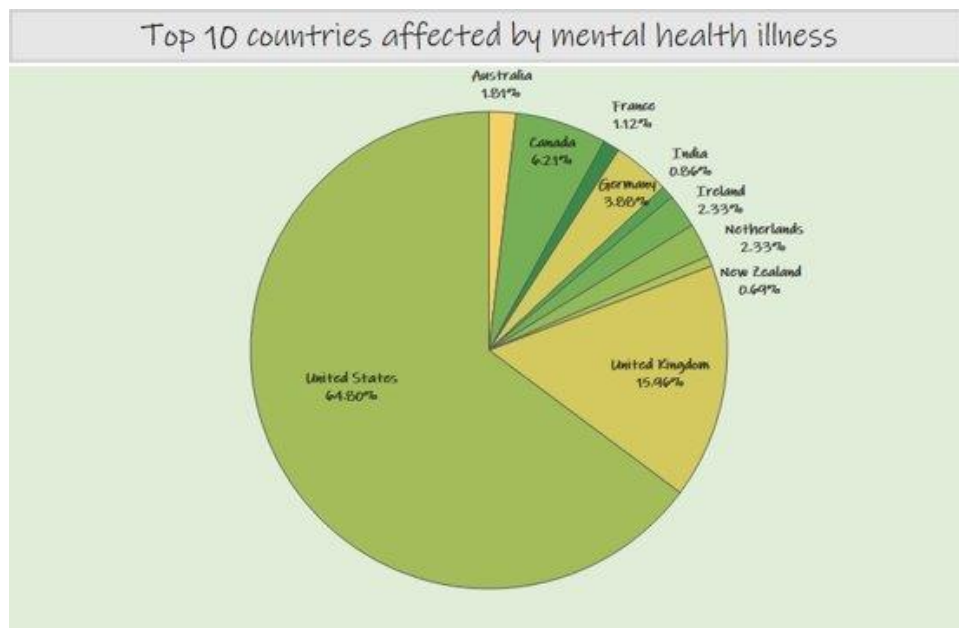
MAJOR FINDINGS, ANALYSIS AND DISCUSSIONS:

A. AGE GROUP ANALYSIS:



- The bar chart shows the relationship between age groups and mental health treatment history in the workplace. The chart reveals that the age group between 30-33 has the highest number of people with mental health treatment history, while the age group between 60-72 has the lowest number of patients. This suggests that the younger age groups may be more susceptible to mental health issues in the workplace compared to the older age groups.

B. GLOBAL ANALYSIS:

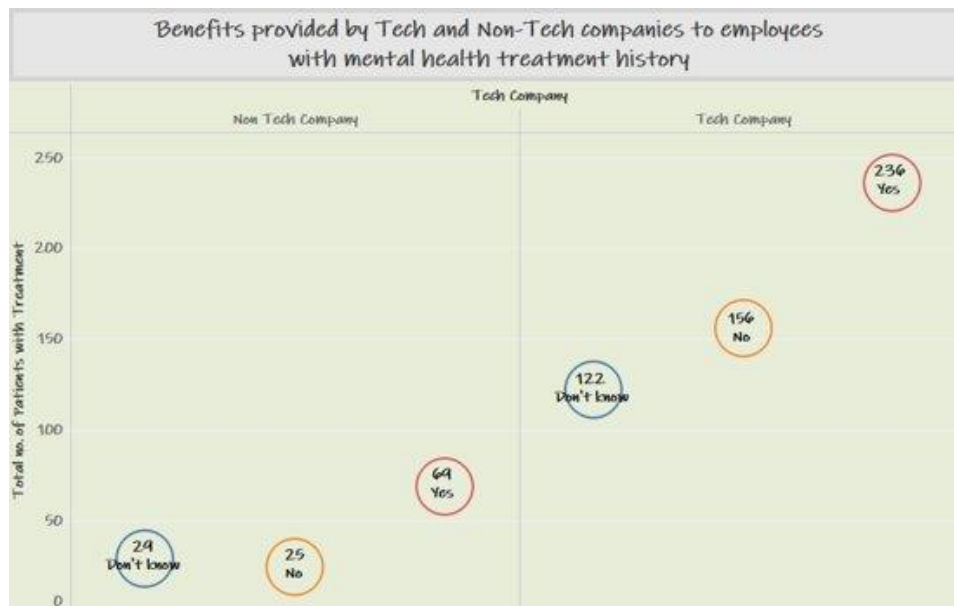


- The pie chart represents the top 10 countries affected by mental health illness. The chart shows that the United States has the highest number of people affected with 64.80%, followed by the United Kingdom with 15.96%. The remaining 8 countries on the list do not have more than 7% of patients affected. This suggests that mental health illnesses are more prevalent in the United States and the United Kingdom compared to other countries.

DATA MODEL:

We used the logistic regression model that works toward predicting the mental health status of an individual and does he/she require the treatment or not. Multiple variables like age, gender, family history, physical health etc are taken into consideration while working on this model. This model helps us organize the data with which we standardized variables related to one another and to real-world entities. The model promises to provide results with 80% accuracy

➤ KEY FINDINGS:

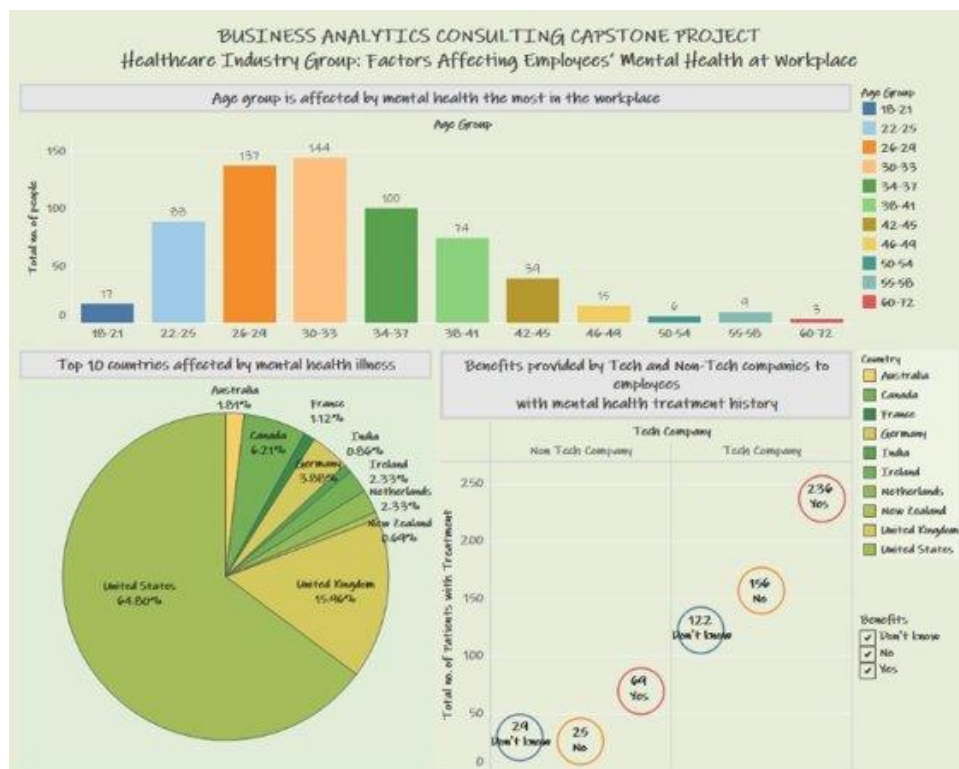


- The graph illustrates the benefits provided by tech and non-tech companies to their employees with a history of mental health treatment. The graph indicates that most of the employees in both tech and non-tech companies are aware of the benefits provided by their employers. However, a significant number of employees are still unaware of the benefits, including those who fall under the "don't know" category, who are unsure about the company policies. This suggests that companies need to work on better communication and awareness strategies to ensure that their employees are fully aware of the mental health benefits provided by their employers.

CONCLUSION AND RECOMMENDATIONS:

Create a supportive work environment: Establish a culture of psychological safety, respect, and support. Provide training and resources: Offer training and resources to help employees manage stress, build resilience, and recognize the signs of mental health issues. Address workload and job demands: Ensure that workloads are manageable and realistic, and that employees have the necessary resources and support to perform their jobs effectively. Foster social connections: Encourage social connections and team-building activities that help build positive relationships and reduce feelings of isolation. The features we employed were vital to our investigation. However, we may have gotten more informative results and analysis if we had additional features at our disposal.

IMPLICATIONS FOR BUSINESS ANALYTICS MANAGERS:



By introducing mental health programs, many corporate sectors will benefit from our business model to care for the mental health of their personnel. Our dashboard will enable organizations to examine the important variables affecting an employee's mental health.

WORK CITED LIST

- Terlizzi, Emily P. "Mental Health Treatment Among Adults Aged 18–44: United States, 2019–2021." *CDC Centers for Disease Control and Prevention*, Sept. 2022, <https://www.cdc.gov/nchs/products/databriefs/db444.htm>. Accessed 10 Apr. 2023.
- "Mental Health at Work." *World Health Organization*, Sept. 2022, <https://www.who.int/news-room/fact-sheets/detail/mental-health-at-work>. Accessed Apr. 2023.
- Bodan, Maya, and Sawan Sethi. "Understanding the Implications of the Economic Downturn." *Deloitte*, Dec. 2022, <https://www2.deloitte.com/us/en/blog/human-capital-blog/2022/recession-proof-your-business.html>. Accessed Apr. 2023.
- Human Resources Professional Association - Mental Health in the Workplace, <https://www.hrpa.ca/hr-insights/mental-health-week/>, May 2021
- BBC article - The Toll of Layoff anxiety, Josie Cox, <https://www.bbc.com/worklife/article/20230203-stress-anxiety-global-layoffs>, February 2023
- World mental health report: Transforming mental health for all, World Health Organization -<https://www.who.int/publications/i/item/9789240049338>, 16 June 2022
- Mental Health at Work <https://www.who.int/news-room/fac>, World Health Organization -sheets/detail/mental-health-at-work, September 2022
- "Workplace Mental Health", Centre for Addiction and Mental Health, CAMH <https://camh.ca/.../workplacementalhealth-a-review-and-recommendations-pdf.pdf>, January 2020
- Products - Data Briefs - Number 444", Centers for Disease Control & Preventions, September 2022
<https://www.cdc.gov/nchs/products/databriefs/db444.htm>
- "Mental Health - Psychosocial Risk Factors in the Workplace: OSH Answers", Government of Canada
https://www.ccohs.ca/oshanswers/psychosocial/mentalhealth_risk.html

- Mandie Conforti, “2023 Workplace Mental Health: New Challenges, New Directions, and Best Practices” <https://springhealth.com/blog/2023-workplace-mental-health/>, 2023
- Mental Health and Suicide Prevention in Men: Evidence Brief [https://mentalhealthcommission.ca/wp-content/uploads/2022/06/Mental-Health-and-Suicide,](https://mentalhealthcommission.ca/wp-content/uploads/2022/06/Mental-Health-and-Suicide-2022) 2022
- “Workplace Mental Health”, Centre for Addiction and Mental Health, CAMH <https://camh.ca/.../workplacementalhealth-a-review-and-recommendations-pdf.pdf>, January 2020