MENTAL HEALTH RESEARCH

CASE STUDY

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CASE STUDY

Introduction: The National Center for Advancing Translational Sciences (NCATS) is committed to advancing mental health research to improve the well-being of individuals across the globe. Clinical researchers at NCATS are actively involved in mental health research projects. One such researcher, Dr. Emily Turner, faces challenges in effectively analyzing and deriving insights from an extensive dataset containing multiple sheets with data related to mental health and depression prevalence.

Problem Statement: Dr. Emily Turner is a clinical researcher at NCATS, specializing in mental health research. She is working on a project aimed at understanding the prevalence and factors associated with depressive disorders, including schizophrenia, bipolar disorder, eating disorders, anxiety disorders, drug use disorders, and alcohol use disorders. Dr. Turner's dataset is complex and includes the following challenges:

- Data Complexity: The dataset is divided into six sheets, each containing multiple columns with various indicators related to mental health and depressive disorders, making it challenging to navigate and analyze effectively.
- Data Integration: Dr. Turner needs to integrate data from different sheets to perform comprehensive analyses, identify trends, and draw meaningful conclusions.
- Multiple Dimensions: The dataset includes dimensions such as country, year, age groups, education levels, and gender, requiring multi-dimensional analyses to uncover insights.
- Data Volume: With a vast amount of data points across countries and years, handling and visualizing the data for meaningful insights can be overwhelming.

Task: As a business analyst, provide insights and recommendations to Dr. Turner to address her issues and better equip her with the needful insights for the research of mental health disorders.

CASE SOLUTION

BUSINESS REUIREMENTS DOCUMENTATION

Main sections	Subsections	Details
Project overview	Vision/Goals	To make it easier for clinical researchers to understand mental health data by creating a dashboard that helps them see trends in mental health.
	Objectives	To collect data from different sources, make it easy to look at, and help researchers find important insights about mental health.
Project scope	In scope	Analysis about mental health conditions based on details about people's age, education, and where they live
	Out of scope	Analysis of treatments for mental health conditions
Stakeholders' identification	User personas	Mental Health Clinical Researchers like Dr. Emily Turner
	Use cases	Researcher trying to find a trend of depression in young people.
	User stories	As a researcher, I want to see how depression rates have changed over the past ten years
Functional requirements		Should be able to show data as graphs and charts, and should let researchers choose what data they want to view
Non-functional requirements		Tool should be easy to use and should keep data safe
Scope of solution	Current process	Researchers collect data from different sources and try to analyse on their own. It's time-consuming and not very efficient.
	Proposed or future process	Researchers will be able to see all data in one place and quickly analyse.
Project constraints	Risks	Inaccurate data
	Training/staffing needs	Teach clinical researchers to use the dashboard
	Budget	As per limit
Quality control measures		Set ways to ensure data is accurate

SOLUTION

To address these challenges, a comprehensive analysis and visualization report will be developed to assist Dr. Turner in her mental health research project. This solution will include the following components:

- Data Integration: A centralized data repository that combines information from all six sheets, allowing a unified analysis of various mental health indicators.
- Interactive Dashboards: An interactive dashboards using data visualization tools like Power BI, providing Dr. Turner with a user-friendly interface to explore the data efficiently.
- Multi-dimensional Analysis: Enable Dr. Turner to perform multi-dimensional analyses by age, gender, education levels, and more, allowing her to identify patterns and correlations.
- Trend Analysis: Implement time-series analysis to uncover trends in mental health and depressive disorders.
- Correlation Analysis: Conduct correlation analysis between suicide rates, education levels, age groups, and the prevalence of depressive disorders to identify potential relationships.
- Geospatial Analysis: Utilize geospatial mapping to visualize regional variations in mental health indicators and depressive disorder prevalence.

MENTAL HEALTH ANALYSIS

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011

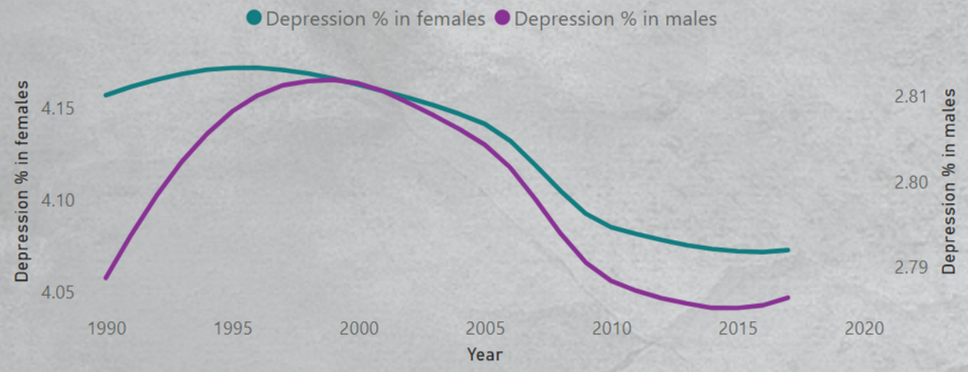
Depression in Males - US vs World Avg

351.5% ▲

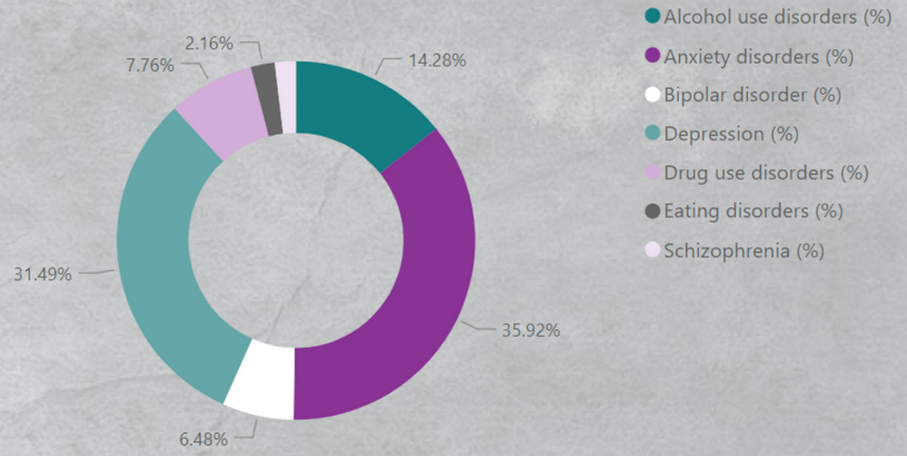
Depression in Females - US vs World Avg

592.1% ▲

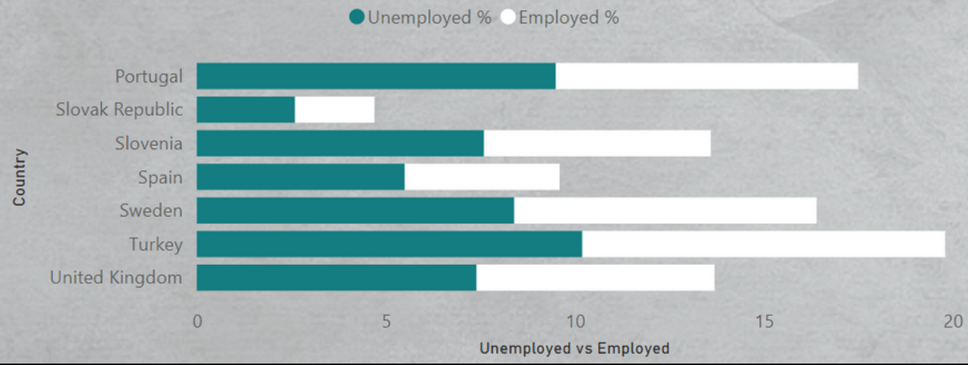
Depression Rate in Males vs Depression Rate in Females, 1990-2017



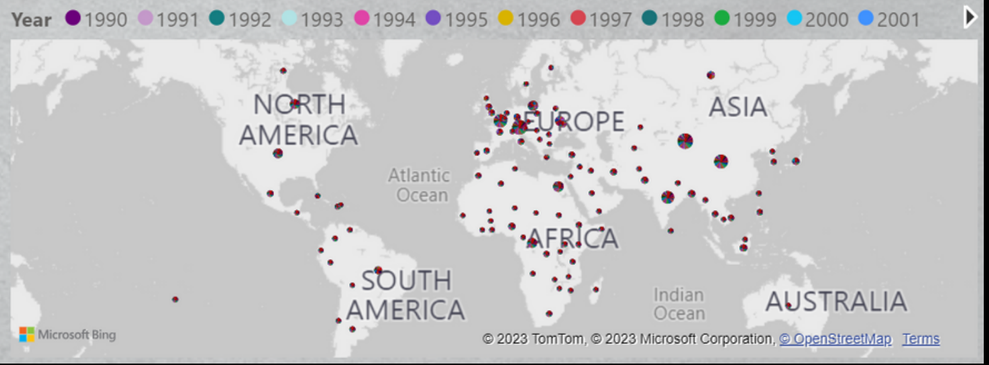
Share of Depressive Disorders



Depressive Disorders in Employed vs. Unemployed Populations



Global Prevalence of Depressive Disorders, 1990-2017



ANALYSIS

The challenges faced by Dr. Turner can be visualised and analysed using the report. The analysis supports NCATS' mission is to accelerate the development of new treatments, ensuring they reach people faster. The business analysis based on the Mental Health Analysis Dashboard in Power BI, consists of key insights presented in various graphs.

- Depression in Males - US vs. World highlights the average depression rate among males in the United States over the years. When compared to the global average, we can observe whether the US experiences a higher burden of depression in males.

- Depression in Females - US vs. World similarly highlights the average depression rate among females in the United States compared to the global average. It aids in understanding potential gender-specific trends in depression.

- Share of Depressive Disorders showcases the percentage of individuals suffering from depressive disorders. This insight helps us grasp the scale and significance of various mental health challenges.

- Depressive Disorders in Employed vs. Unemployed Populations focuses on employed versus unemployed populations . By examining depressive disorders in these groups, we can better understand how employment status may impact mental health in various regions.

- Global Prevalence of Depressive Disorders (1990-2017) visualizes the average prevalence of depressive disorders worldwide over the years from 1990 to 2017. It provides a geographical perspective on the persistence of depressive disorders across time.

RECOMMENDATIONS

Based on the analysis of the Mental Health Analysis Dashboard, some recommendations for the Dr. Turner at NCATS would be -

- To explore gender-specific mental health dynamics and conduct studies to identify potential factors contributing to these differences and develop gender-sensitive mental health programs. The graphs also provide a need for targeted mental health interventions, particularly for females in the US.

- To consider collaborating with international organizations and researchers to share insights, best practices, and resources for combating depressive disorders on a global scale. It highlights the importance of addressing mental health as a global issue.

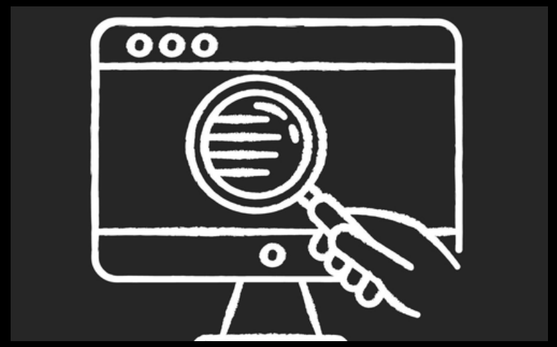
- As the analysis suggests employment status may influence mental health outcomes. Research and implement workplace mental health programs to support employees, potentially reducing the burden of depressive disorders. Also, consider exploring socioeconomic and cultural factors that may influence depression rates. These factors can play a significant role in mental health outcomes. Collaborate with social scientists and cultural experts to gain a holistic understanding.

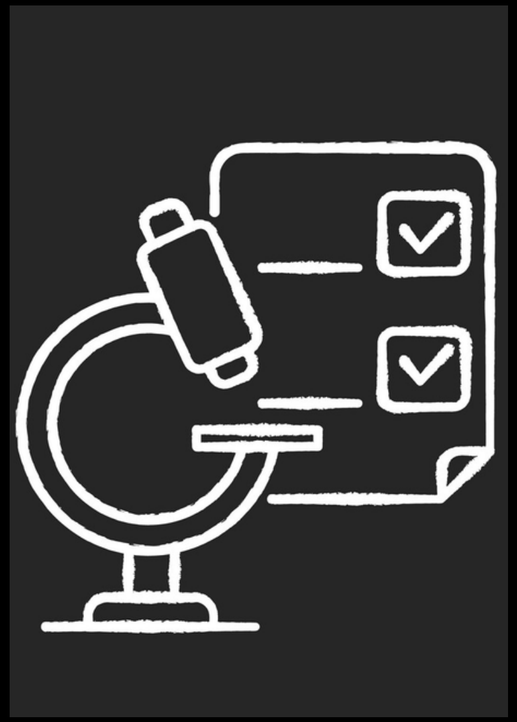
- To foster collaboration between mental health researchers, clinicians, policymakers, and public health experts. Cross-disciplinary approaches can lead to innovative solutions and ensure that research findings translate into actionable policies and practices. Develop public education and awareness campaigns to reduce the stigma surrounding mental health issues. Promote and raise awareness for early detection and seeking help for depressive disorders.

By implementing these recommendations, the mental health clinical researcher at NCATS can contribute to the advancement of mental health research and the mission of delivering more treatments to individuals worldwide more swiftly.

SOURCES

- Dataset - https://data.world/vizzup/mental-health-depression-disorder-data/workspace/file?filename=Mental+health+Depression+disorder+Data.xlsx
- Case study problem statement - Chatgpt.openai.com
- Dashboard Theme - NCATS website (https://ncats.nih.gov/index.php)
- References - https://ourworldindata.org/mental-health#all-charts-preview





CONCLUSION

The development of a comprehensive data analysis and visualization solution will enable researchers like Dr. Emily Turner to extract meaningful insights from complex datasets, driving innovation and progress in mental health research and translational science.

THANK YOU