Mental Health Links

2024 © Analyzed & Designed by **Wenge Wang**

What's the problem?

30% of people experienced suboptimal mental health for some days in a moth.

Mental disorders are a significant global concern, impacting millions of lives worldwide, from depression to schizophrenia. Given their complexity and prevalence, understanding the connections between different disorders is crucial for developing effective prevention strategies, interventions, and treatments.

This project delves into two key questions:

- How do various mental health disorders interconnect?
- What factors influence them?

Data and Method

The dataset utilized in this study was sourced from various reputable sources, including the ***Centers for Disease Control and Prevention (CDC)***, the ***New York City Health Department***, and the ***Substance Abuse and Mental Health Services Administration (SAMHSA)***.

The binary data in the dataset, representing the presence or absence of specific mental health conditions, was processed using hierarchical clustering techniques, such as Hamming distance, to identify co-occurrence patterns among different disorders.

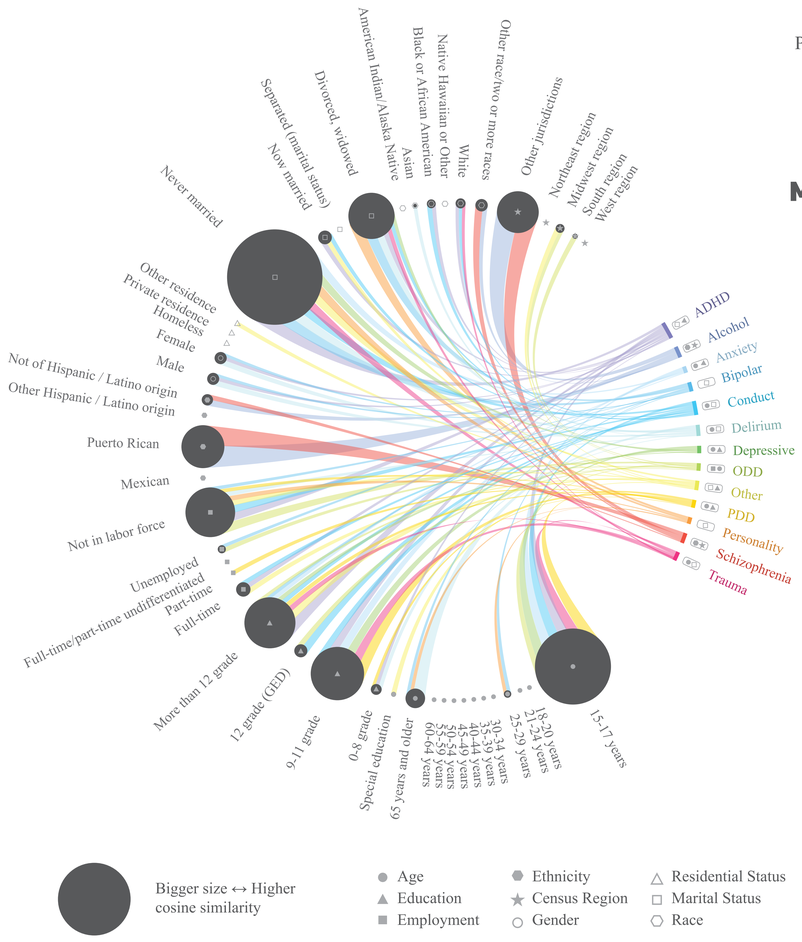
Additionally, categorical data, encompassing various demographic and diagnostic categories, underwent analysis using multiple correspondence analysis (MCA) to reveal associations and trends within the dataset. The interplay between demographic metrics and mental disorder was visualized through chord diagrams.

I utilized a diverse array of tools for data analysis and visualization, including Python, Google Sheets, and R for data preprocessing, Adobe Illustrator for crafting visual elements, and D3.js for interactive visualizations, ensuring a comprehensive approach to exploring and presenting the data.

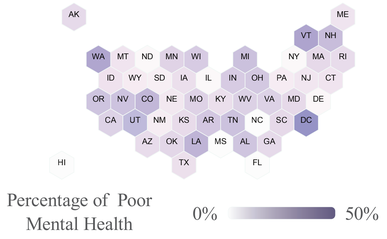
Data Visualization Results

Demographic Metrics vs. Mental Disorders

Stronger relationships (values near 1), determined by Multiple Correspondence Analysis (MCA) cosine similarity, indicated closer associations. The dataset was filtered to focus on key findings.

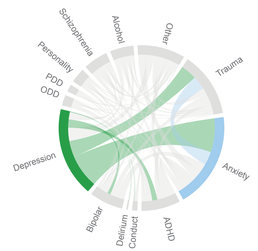


Mental Health State US Map



Mental Disorder Co-Occurrence

It's derived from the co-occurrence amount matrix generated from binary data.



Mental Disorder Hierarchical Clustering

It's based on the matrix of Hamming distance of binary data.

Conclusions

- **Utah and Washington, D.C. emerge as the two states with the highest prevalence of serious mental health issues.** This finding emphasizes the need for targeted interventions and resources in these regions to address the mental health challenges.
- **Mental disorders frequently co-occur, with depression and anxiety ranking as the most prevalent conditions.** This observation highlights the interconnected nature of mental health issues and emphasizes the importance of comprehensive approaches to diagnosis and treatment that consider the overlap between different disorders.
- **Education, age, and marital status demonstrate stronger correlations with mental health disorders.** These factors suggest that socioeconomic and demographic variables play significant roles in shaping individuals' mental well-being. Understanding these correlations can inform more targeted and effective strategies for mental health support and intervention.

References

Substance Abuse and Mental Health Services Administration. (2021). Mental health client-level data.

Centers for Disease Control and Prevention. (2022). Behavioral Risk Factor Surveillance System.

Dale, K. (2022). Data Visualization with Python and JavaScript (2nd ed.). O'Reilly Media, Inc.

Project Website

Please scan the QR code to access the interactive case study, or visit this link:
https://lanjing0803.github.io/mental.html