

Sankey Diagram: Visualising Mental Health Trends of University Students for Early Intervention

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Abstract—Mental health difficulties are rising concern among university students, with many going unreported and also unrecognised until they become very severe. This proposal describes a data visualisation dashboard for spotting and analysing the trends in students' mental health using institutional data, surveys, and engagement metrics. The dashboard uses interactive visual data to help counsellors and administrators discover the problems early and intervene quickly. The answer is consistent with the UN SDG Goal 3 which is Good Health and Well-Being. This proposal describes the problem, suggested solution, stakeholders, value, technical requirements, the tools, and schedule for implementing the solution successfully.

Keywords— mental health, university students, data visualization

I. PROBLEM STATEMENT

Mental health issues like anxiety, sadness, depression, and burnout are becoming more common among university students. However, early signs are usually overlooked due to the stigma, lack of knowledge, and a lack of real-time data. Most of an intervention are reactive rather than the proactive. Institutions now lack a centralised, interactive tool for visualising the mental health trends and the forecasting the possible crises. This gap impedes prompt action and comprehensive student assistance, which is contradicts the SDG Goal 3's objectives which is ensure healthy lives and promote well-being for all at all ages.

II. TECHNICAL DESCRIPTION OF SANKEY DIAGRAM AS A SOLUTION FOR THE PROBLEM

The Sankey Diagram is a flow visualisation that represents the categorical data and the transitions between categories. It is particularly useful for the visualising of the flow of students' mental health at university.

A. Key Features and the Functionality

The Sankey diagram clearly depicts the flow of mental health the causes and their impacts. Each input source such as academic stress and the financial strain passes through intermediary nodes like stress indicators or coping strategies, which then connect to outcomes for instances the depression and counselling use. This system will allow the stakeholders to understand where mental health strains arise and how they spread throughout the student life. It emphasises the bottlenecks and the frequently occurring transitions that require attention.

B. Customization and Interactivity

Users will be able to filter the views depending on the faculty, gender, academic year, or time period like before and during exams. Hover-over tooltips show the specific values for each flow, and nodes can be enlarged or collapsed to study more detailed data. Users can also model 'what-if' scenarios by modifying the node weights to examine how interventions like stress-relief programs affect outcomes.

C. Implementation Software

Portly, which is has high interactivity, the data integration, and online support, will be used to create the Sankey diagram in the Python. Moreover, Tableau or Flourish Studio can be utilised for the speedier prototyping and implementation. Data will be pre-processed using the Python's pandas, and visualisations will be exported or included in HTML-compatible dashboards.

D. Integration with Online Dashboard

The Sankey visualisation will be integrated into a centralised mental health dashboard using the web technology. The dashboard will also provide the summary data, filter panels, and links to student support services. This online application gives the counsellors and administrators real-time access to track the mental health trends and take the preventive action.

III. PROFILE OF THE TARGETED STAKEHOLDERS

A. University Counselors

B. Faculty Administrators

C. Student Affairs Division

D. Policy Makers and Health Units

E. Students

IV. JUSTIFICATION OF THE VALUE PROPOSITION

A. University Counselors

The visualisation allows for the early discovery of the students who may be at risk, which will be benefits for university counsellors the most immediately. The counsellors can intervene proactively by looking at patterns in the mental health stresses and their links to outcomes such as counselling visits or depression. The data enables them to prioritise

outreach and the support for student groups or faculty with greater stress levels, hence optimising their intervention strategies.

B. Faculty Administrators

Faculty administrators can use the test to analyse the impact of academic workload on a student mental health. By understanding how assignment pressure, exam timeframes, and the other academic demands flow into student stress and anxiety, they may make educated judgements regarding the curriculum design, deadline distribution, and pacing. This promotes a healthy academic atmosphere, especially in the faculties with a history of excessive workload or stress indicators.

C. Student Affairs Division

The visualisation provides Student Affairs Division with wide picture of student well-being during the academic year. It assists in identifying the important periods when students are most vulnerable, like exam seasons or semester breaks. This knowledge enables the planning and the coordination of relevant initiatives, such as wellness campaigns, peer support programs, or recreational activities, while ensuring that they are in line with the actual student needs.

D. Policy Makers and Health Units

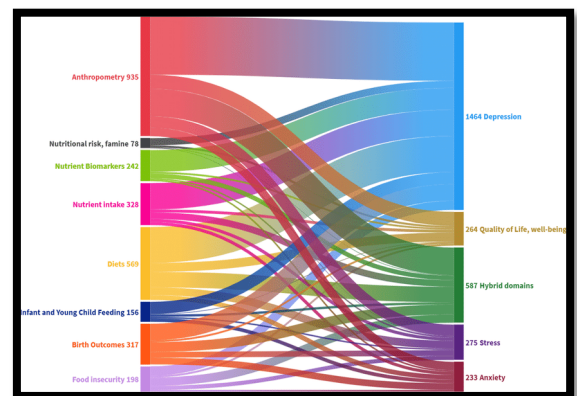
This technology will provide a strategic edge for health and wellness policymakers, such as university leadership and national education stakeholders. The data-driven insights enable evidence-based decision-making when developing or changing student welfare policy. They can assess the efficacy of prior programs and identify areas where extra cash or the resources are most urgently required, arguing for greater mental health support networks.

E. Students

While not the primary users of the visualisation, students benefit indirectly. Improved awareness, the data-driven actions, and refined academic management based on visualisation contribute to a more supportive university environment. The students receive the treatment they need early, frequently before concerns escalate, due to the proactive response allowed by this tool.

V. ILLUSTRATION OF VISUALIZATION

- Prototype of Sankey Diagram



Source: <https://sl.bing.net/IRIQqCWMBE>

VI. INFORMATION OF REQUIREMENTS

A. Technical

- The anonymous student mental health surveys for data.
- The software like Python.
- The skill for data cleaning, the dashboard development and the basic statistical modelling.

B. Financial

- The Tableau is free and minimal cost unless using advanced analytics tools
- Optional Figma licence.

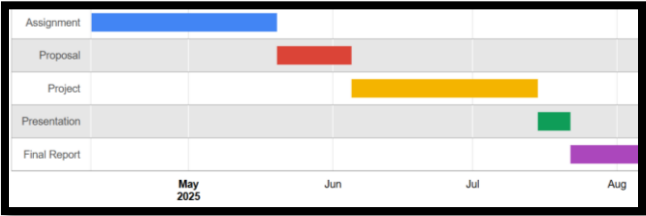
C. Time

- For data collection and pre-processing: 2 weeks
- For visualization design and development: 2 weeks
- For testing and feedback: 1 week
- For report and documentation: 1 week

VII. JUSTIFICATION FOR THE CHOSEN TOOL

Tableau Public, which is provide dynamic dashboards and easy connection with the spreadsheets, is suitable for your project. Python will be used to clean and aggregate the data. The Figma was chosen for quick prototype and UI sketching. These tools are easily available, user-friendly, and also frequently used in the industry.

VIII.PROJECT TIME-LINE



Source: [Course: DATA ANALYTICS AND VISUALIZATION | KALAM24252](#)

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