One Day At A Time:

Analyzing Mental Health Trends by Academic Year in University Students

BY: Duvy Katscher

FINAL TERM CAPSTONE PROPOSAL

Background

- University students often face considerable mental health challenges, which may or may not change over their academic journey.

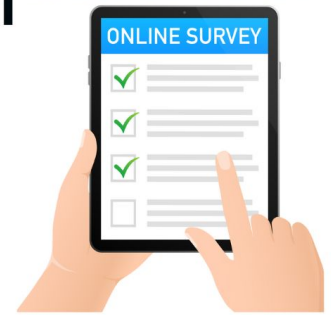
- Understanding how mental health concerns vary by year of study can help institutions improve mental health services and address student needs proactively.

Background

- The University of Victoria's Department of Psychology curated a dataset which can answer this question!
  - It recorded the mental health status and related lifestyle factors of Canadian undergraduate students during the COVID-19 pandemic.
  - Data was **collected between September 22, 2020 and October 30, 2020 via an online Qualtrics survey.**
  - **Participants recorded consist of 1,192 undergraduate students** who responded to the survey.

PSYCHOLOGY

qualtrics XM



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Objectives

- My objective by working with the University data set was to be able to provide universities with evidence-based insights into which years of study students are most vulnerable to mental health challenges.

- The results from this dataset can support evidence for implementing tailored wellness initiatives, such as peer support programs, and preventative mental health campaigns.

Main Problem Statement

Do undergraduate students in different academic years (e.g., first-year vs. fourth-year) report significantly different levels of depression, anxiety, and stress? Is there a relationship between employment status and these stress levels? Does working while studying create stress for undergraduate students?

While analyzing the data I was able to make the following observations.

- Among those students that were surveyed, there was widespread sleep deprivation.
- Infrequent engagement in mindfulness practices, and a notable receptivity to educational resources among students.
- A particularly prominent observation is the disproportionately higher stress levels reported by female students compared to their male counterparts.
- Employment status and academic year appearing to have a less significant impact on overall perceived stress.

Methods

- ***Data preparation:*** The initial dataset named student_data.csv contained encoded columns that required relabeling to help facilitate better understanding for analysis

- ***Visualizations & Analytics:*** In order to be able to deliver key insights from the university student data I used the following data visualization and analytical methods.
    - Looking at Stress Feelings
    - Anxiety based on Years:
    - Jobs, School Year, and Anxiety
    - ANOVA Tables
    - Mental Health Across Canada
    - Do Diagnosed Students Value Resources More?
    - Finding Stress Groups
    - What Low-Stress Students Do

Results

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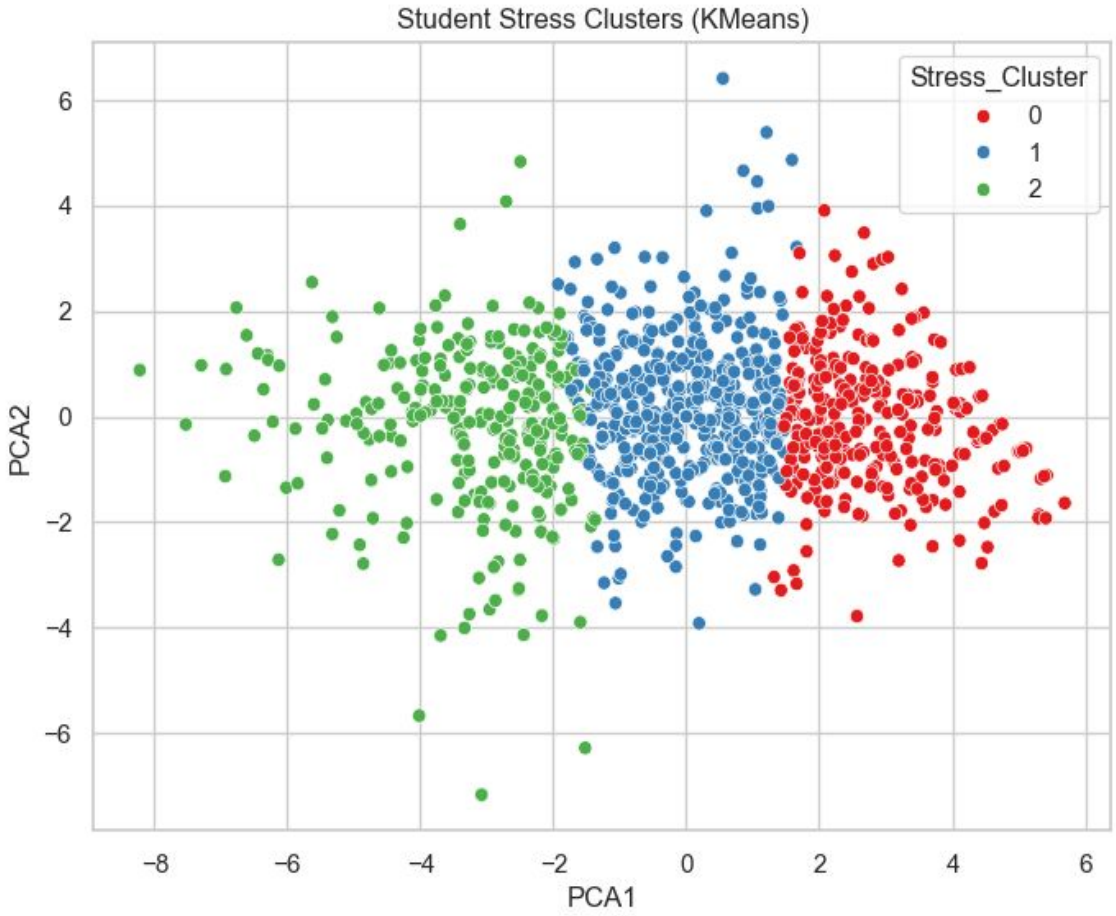
The Foundational Realities

Cluster 0: High Perceived Stress: This group reported significantly elevated stress, feeling overwhelmed and believing difficulties were piling up. They also expressed a strong sense of being out of control and angered by things outside their control.

Cluster 1: Moderate Perceived Stress: This group had intermediate stress levels, with a better sense of control and coping ability compared to the high-stress cluster.

Cluster 2: Low Perceived Stress: This group reported the lowest levels of perceived stress, feeling confident in their ability to handle problems and feeling less often overwhelmed or upset.



The Foundational Realities

After breaking down the group into clusters I went on to compare the mean of all clusters across different behavioral columns to see if there were any common trends among the groups and the two most

An important finding was the low average **4.37 hours of sleep per night across the student population.** This severe lack of sleep is very concerning

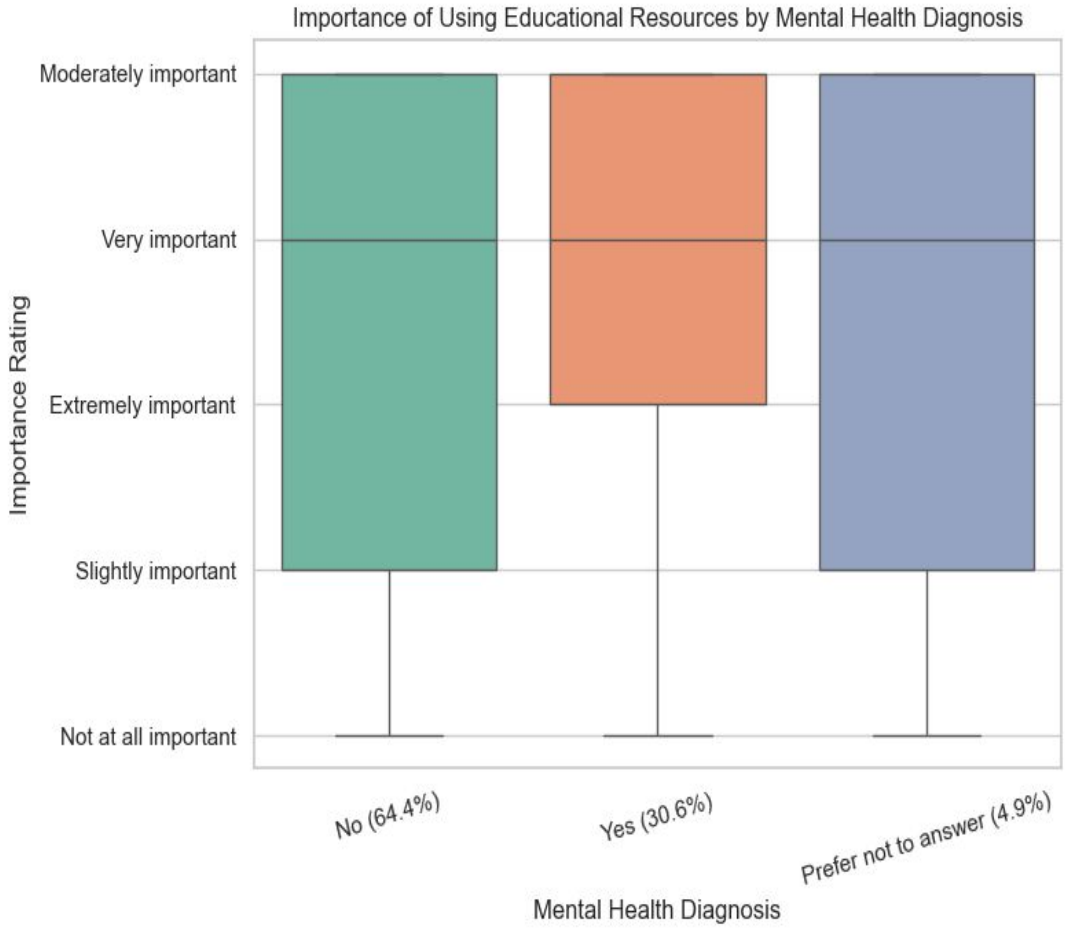
Another student population characteristic is infrequent mindfulness practice. On average, students reported **low engagement in mindfulness practices** (mean score of 2.08 on an unspecified scale, suggesting low frequency), indicating an underutilized coping mechanism.

```
Hours of sleep per night:
4.370491803278688

Frequency of mindfulness practice:
2.0754098360655737

Hobbies_Imp_1_Importance of athletics (sports/intramurals):
Hobbies_Imp_1_Importance of athletics (sports/intramurals)
Not at all important    0.377049
Slightly important      0.216393
Moderately important    0.170492
Very important          0.147541
Extremely important     0.088525
Name: proportion, dtype: float64

Hobbies_Imp_8_Importance of using educational resources:
Hobbies_Imp_8_Importance of using educational resources
Moderately important    0.350820
Very important          0.242623
Slightly important      0.232787
```

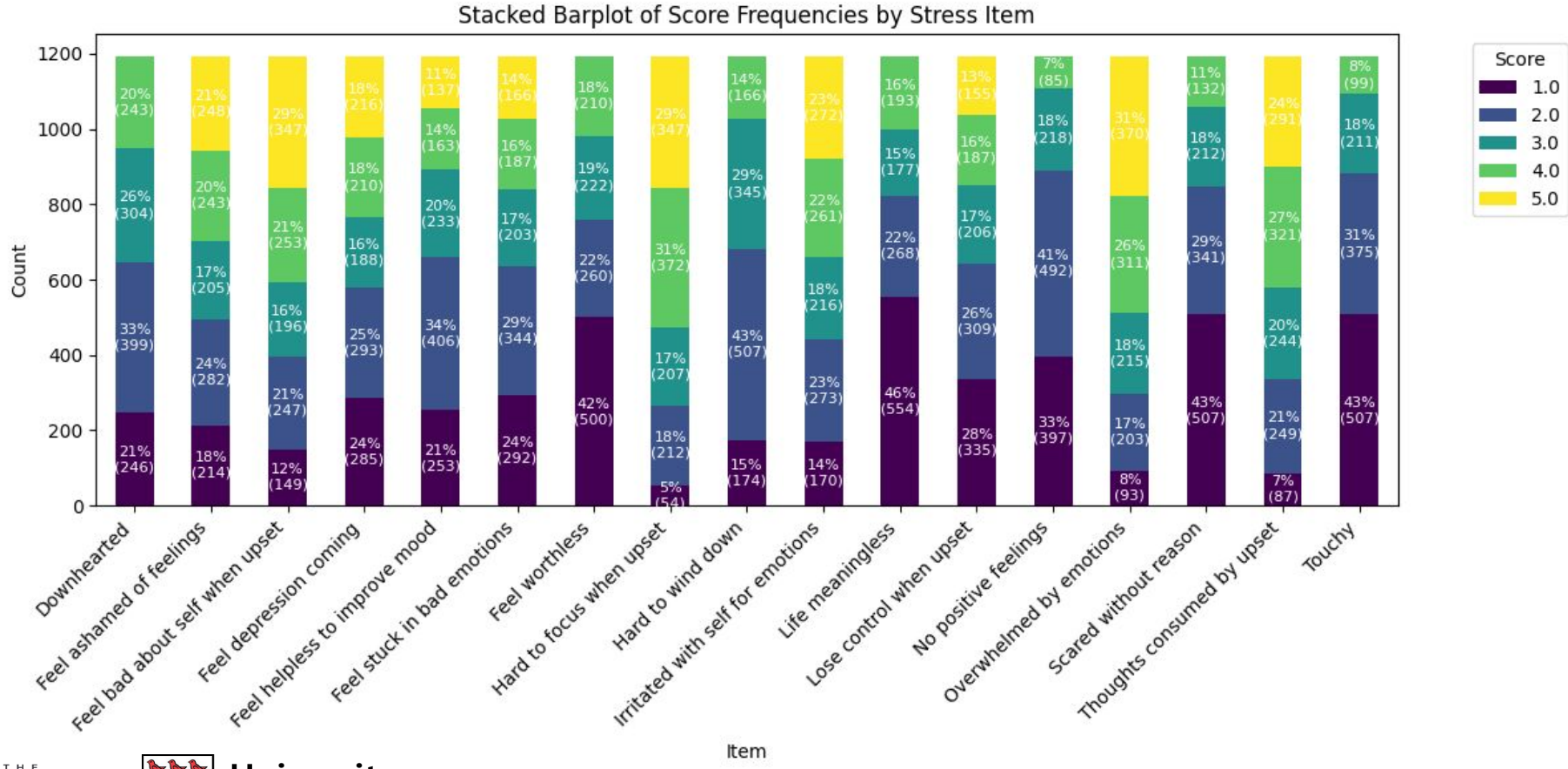
The Foundational Realities

One positive characteristic is that students, regardless of their mental health diagnosis, or stress level consistently perceive educational resources as "Moderately important" or "Very important."

This suggests that this student population would be receptive to a Universities intervention strategies and resources.



Beyond the Surface: What Stress Feels Like



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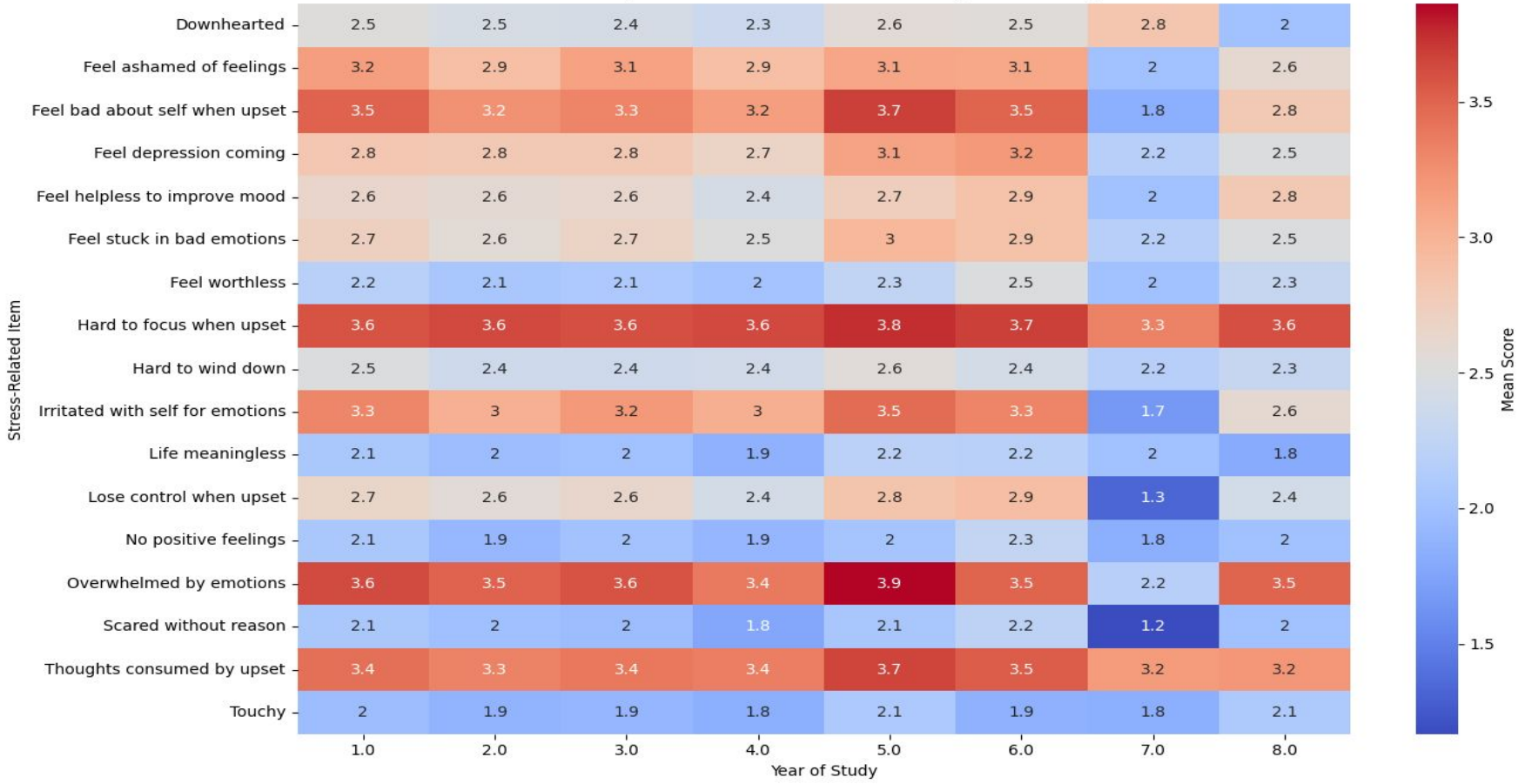

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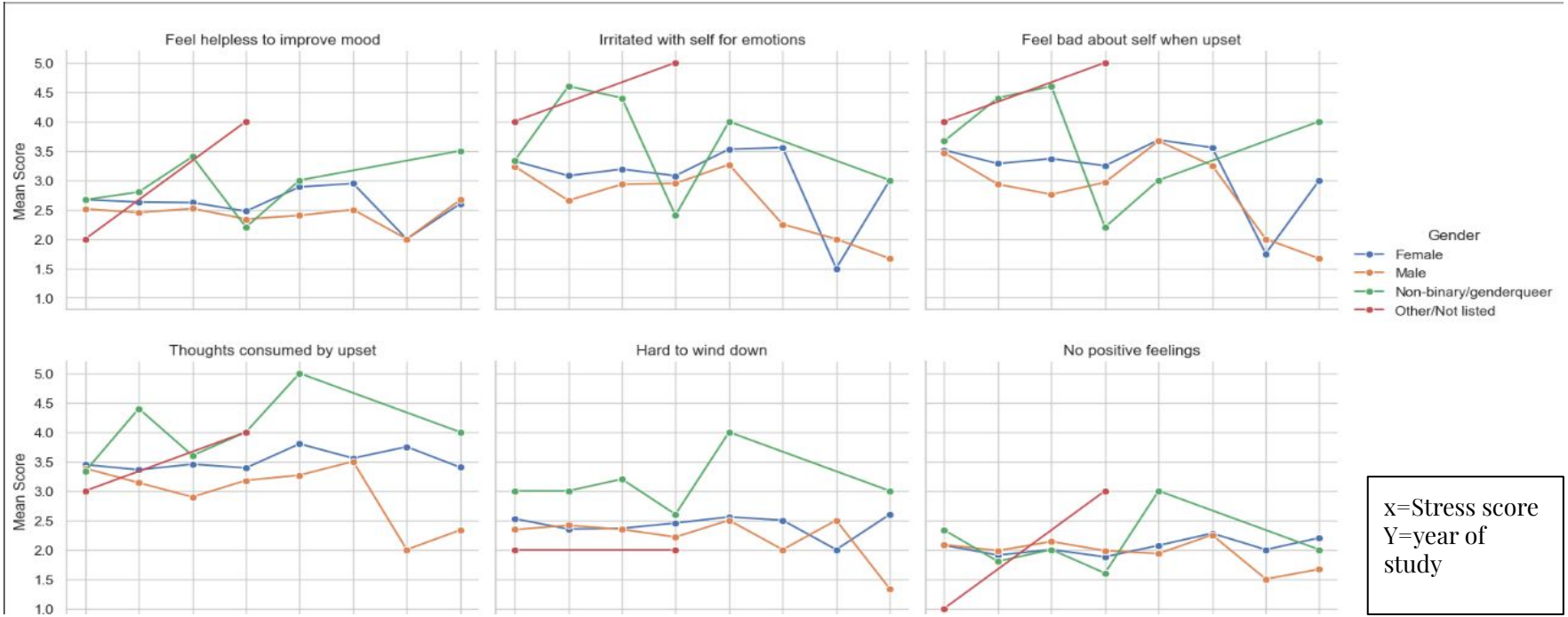
Stress Items Score by Gender and Year of Study



x=Stress score
Y=year of study

After breaking apart stress by year which stress item had the highest percentage and I wanted to if gender had an impact on specific stress items, At a glance it looks like it does.

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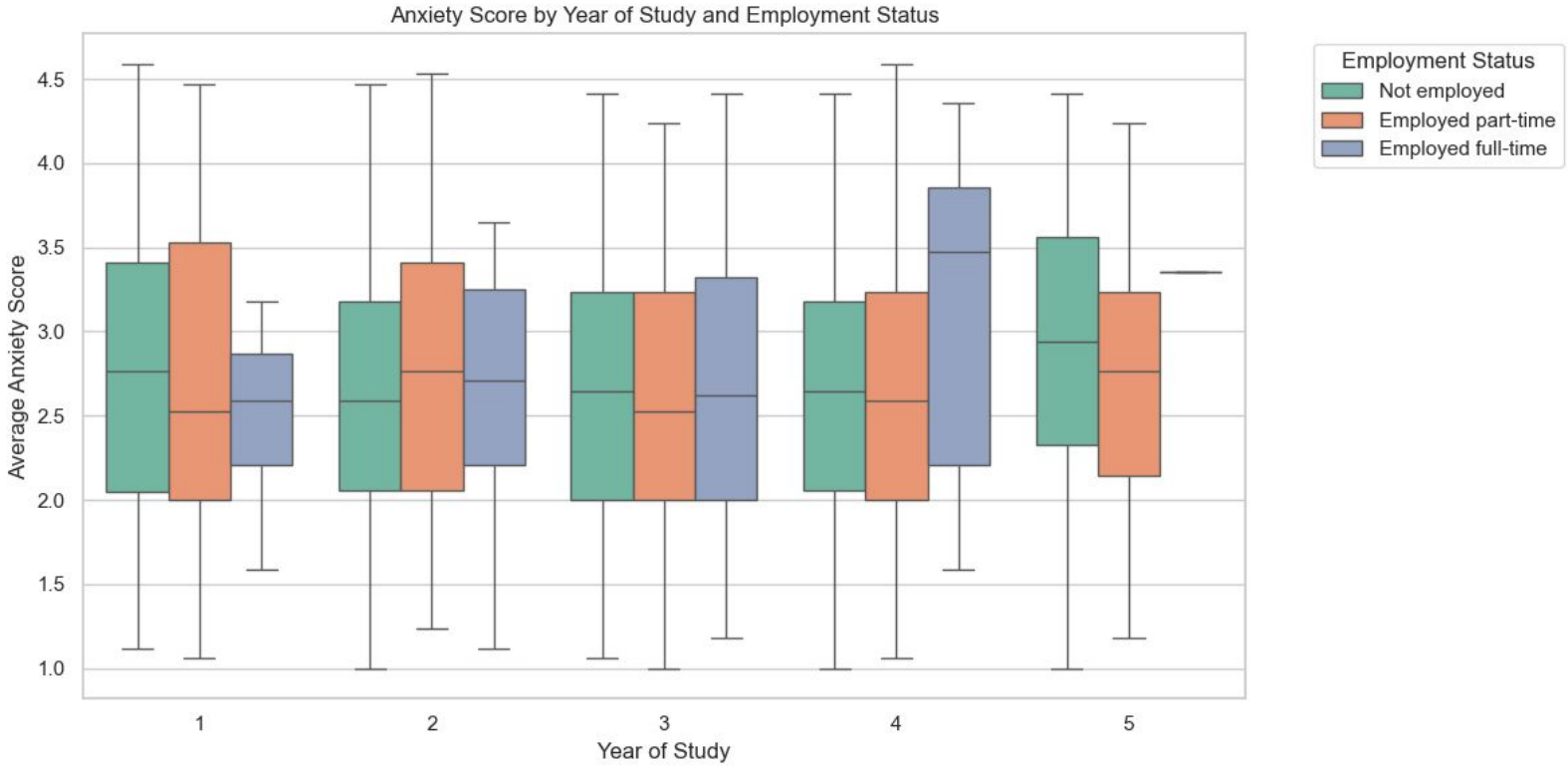
Beyond the Surface: What Stress Feels Like



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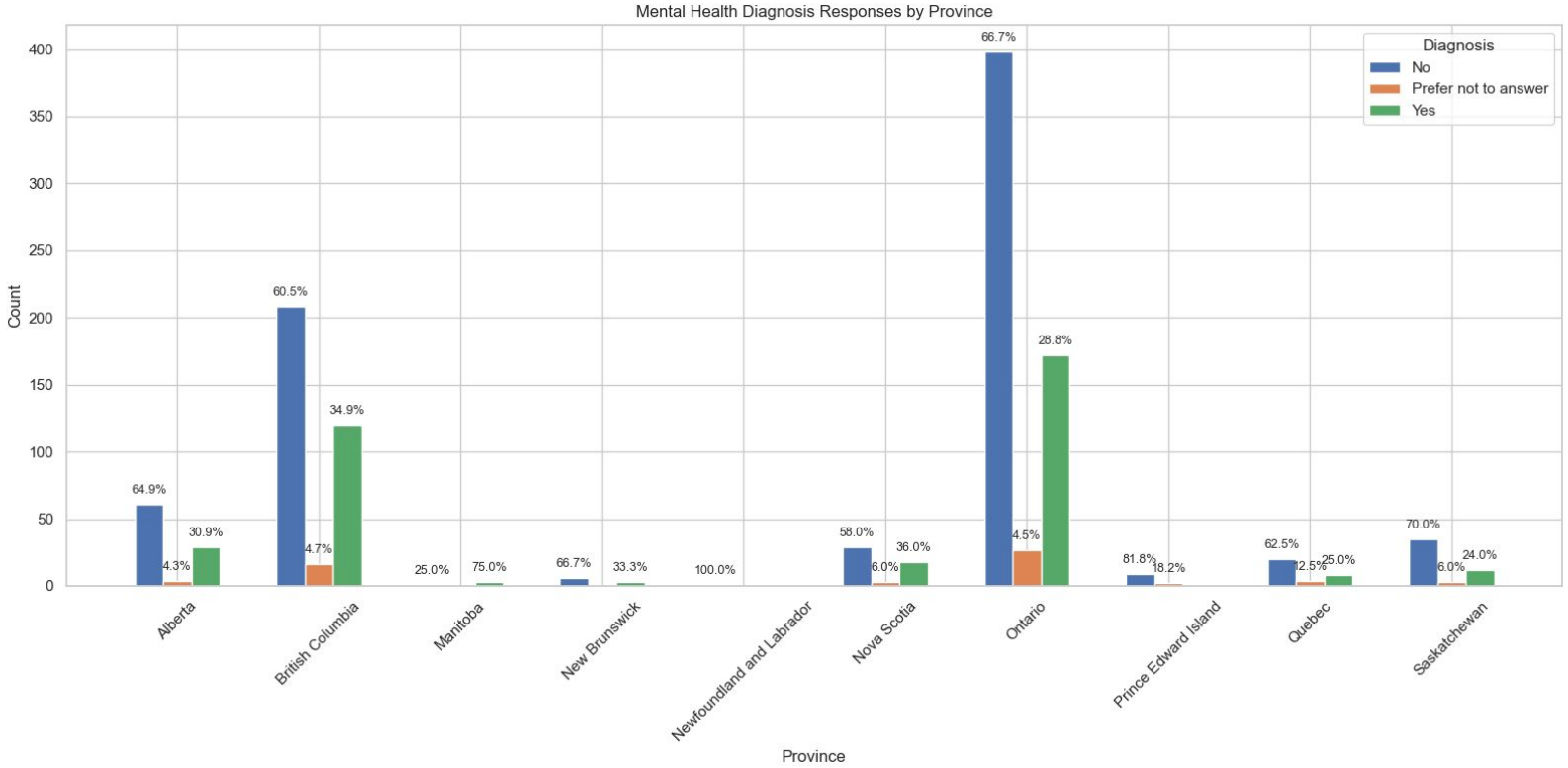
Is there a relationship between stress, gender, employment status and year of study? Do they Impact stress levels?

No

Effect	sum_sq	df	F	p-value (PR(>F))	Interpretation
Gender	~0	3	~0	1.000	No effect detected (probably rounding issues here)
Employment	0.21	2	0.15	0.696	No significant effect
Year_credits	-2.43	4	-0.87	1.000	No significant effect (negative F is unusual; likely rounding or computation artifact)
Gender × Employment	9.37	6	2.24	0.082	Interaction is *close* to significant (p ~0.08)
Gender × Year_credits	7.20	12	0.86	0.486	No significant interaction
Employment × Year_credits	3.27	8	0.59	0.671	No significant interaction
Gender × Employment × Year_credits	23.40	24	1.40	0.133	No significant 3-way interaction
Residual (Error)	802.33	1153	—	—	Remaining unexplained variation

From Where Abouts?



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KEY
TAKEAWAYS

Recommendations

1. Address lack of sleep as a priority by comprehensive importance of sleep education and strategies specifically aimed at the University to try and lessen the workload placed on students (minimize work needed to be done out of class).
2. Targeted interventions for stress clusters by designing support programs that are tailored to the High, Moderate, and Low stress clusters. This allows for more precise and effective resource allocation and content delivery.
    a. High-Stress Cluster: Needs urgent, intensive support focused on crisis management, effective coping with overwhelm, restoring a sense of control, and managing pervasive negative thoughts.
    b. Moderate-Stress Cluster: Benefits from proactive strategies, basic stress management skills, and resources to prevent escalation.
    c. Low-Stress Cluster: Can benefit from resilience-building education and resources to maintain their well-being and prevent future stress.
3. Focus on core emotional and cognitive skills by developing educational resources that specifically equip students with strategies for:
    a. Managing overwhelm and improving focus during emotional distress.
    b. Counteracting negative self-talk, self-blame, and rumination.
    c. Enhancing emotional regulation and problem-solving.

Thank You!

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