

# **Understanding Student Well-being: A Holistic Approach**

## **UniWell** **Challenge Documentation**

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## 1) Data preparation process description

For our project, we immediately knew we wanted new data that is up to date with the current state of tunisian students as we wanted to have original insight into the issues at hand. The data collection process started after agreeing on what themes we specifically wanted to work on. We knew we wanted to use a survey. And although there were plenty of topics we hoped to delve into and ask about in detail, we made sure to consider its brevity so we can reach our goals when it comes to sharing it.

Our survey was conducted through google forms. When creating it, we mainly expanded on the themes of social relationships, physical and mental health, emotional resilience and academic success through our questions. For example, when it came to social relationships, we weren't only interested in who the relationship is with whether that be family, friends, fellow students or teachers but we also considered the difference between the emotional or material support present in said relationships.

We hoped to achieve some real and specific answers without making those answering the questions feel like they're too personal. And of course, we finished it off with some open ended questions to allow students to express themselves. Next up, When sharing the survey we decided to not limit it to our institut. We posted it wherever we could and with the help of our connections we almost reached 100 responses within a few days. In fact we received answers from all across the country. The goal of not limiting its reach was to see what difference in perspective we might find depending on the location of those who took the survey as well as to find the problems in common between all answers to better understand the experience of the tunisian student nowadays.

Now that we had our data, our next step was to clean and organize it in a sheet, filtering out any unserious answers in the process. With that we were ready to start our work. We already had an idea of what we specifically wanted to work on, and our dataset only confirmed the importance of the subjects we had in mind.

## 2) Data description

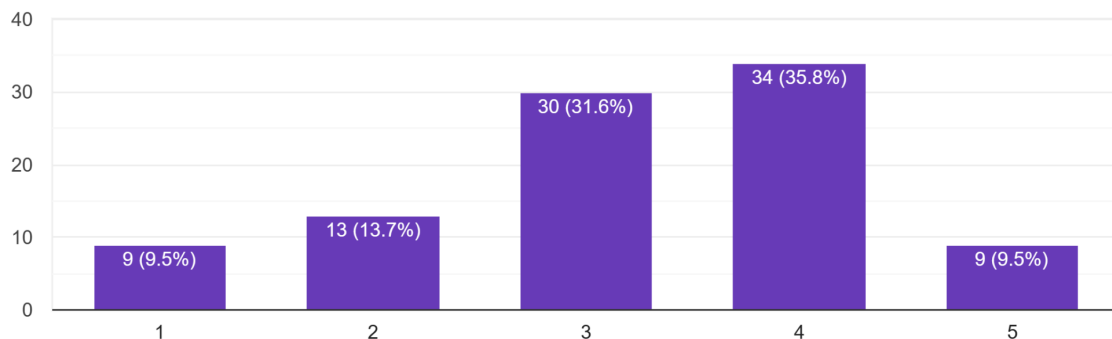
The most prominent age range of our data was 18 to 21 years old, as that group represented 90% of our answers, with only 10% of answers coming from 22 to 26 year olds. The data was also fairly split between answers from both men and women, with women having a slight lead (56% female answers and 44% male answers). And although the majority of responses came from our own institut, we also had responses from all over the country (from zaghouan, kef, mahdia, etc).

### a- Social relationships

When it comes to the actual academic environments that students inhabit, students seem fairly yet not quite fully comfortable as shown by this chart of answers

How comfortable do you feel in your current school social environment?

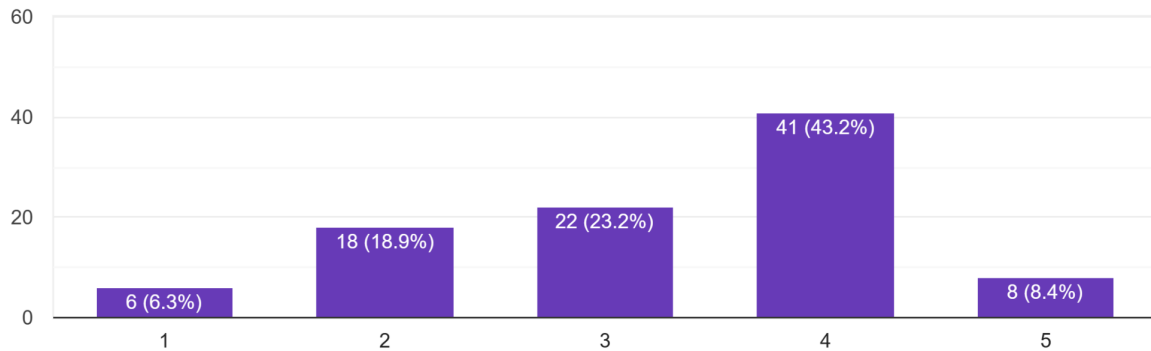
95 responses



When asked about their satisfaction with the ability to socialize within said environment, we ended up with very similar results, leading us to believe that although students aren't fully satisfied with their social life in academic environments, it isn't what they would consider to be the main issue.

### Rate your ability to socialise within said environment

95 responses

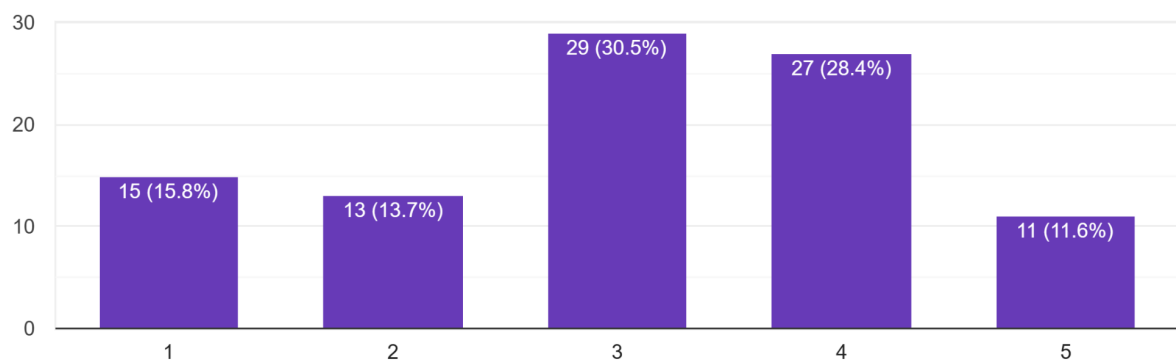


Instead, when asked about what survey participants consider to be a cause of stress, a good number of answers pointed to the actual academic system, the fact that they feel overworked, and the stress and pressure that comes from exams.

Additionally, when it comes to social activities outside of academic responsibilities, although the majority does engage in them there is a high percentage of those who gave a less than average rating (almost 30%). This can be traced back to the same problem of being overworked.

### How often do you engage in social activities outside of your academic responsibilities?

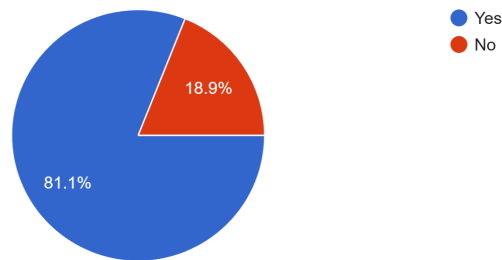
95 responses



Next, we sought answers about family relationships as they are just as important as the academic environment. And despite most people being supported by their family in their academic pursuits, nearly 20% aren't. Additionally, the subject of family continues to be a sensitive one when it comes to material support because even if the majority of students feel supported, some are clearly shackled in material aspects (about 16%). Undoubtedly however the most split responses come regarding the emotional support provided by family, with the most picked rating being the lowest one(24%), which signals a clear issue when it comes to communication and support between parents and their children.

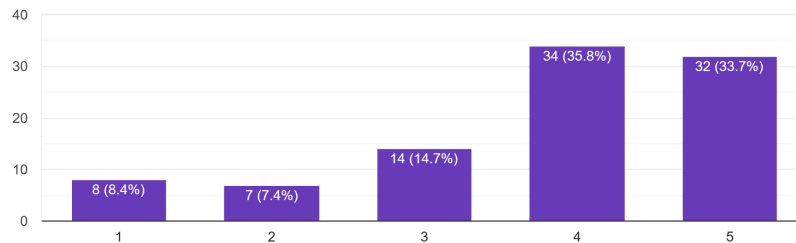
Do you feel supported by family in your academic pursuit?

95 responses



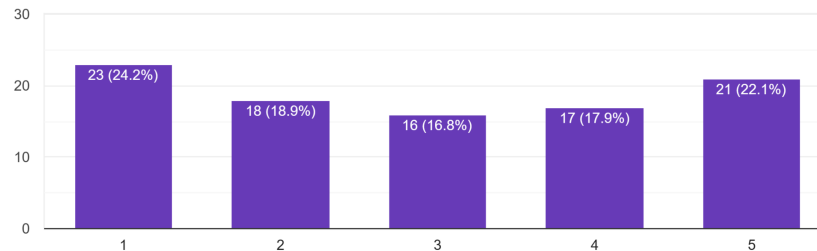
Is your family a reliable source of material support when it comes to other aspects of life?

95 responses



Is your family a reliable source of emotional support when it comes to other aspects of life?

95 responses

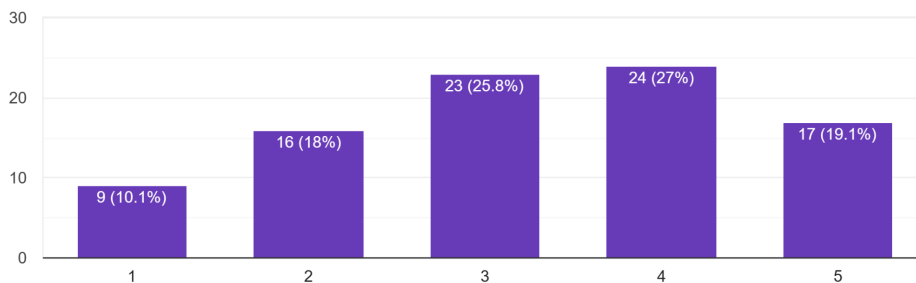


## b- Physical and Mental Health

When asked about issues such as stress and anxiety, most participants expressed feeling them on a high level (37%), with a good percentage of said participants admitting that it affects both their academic life and physical health.

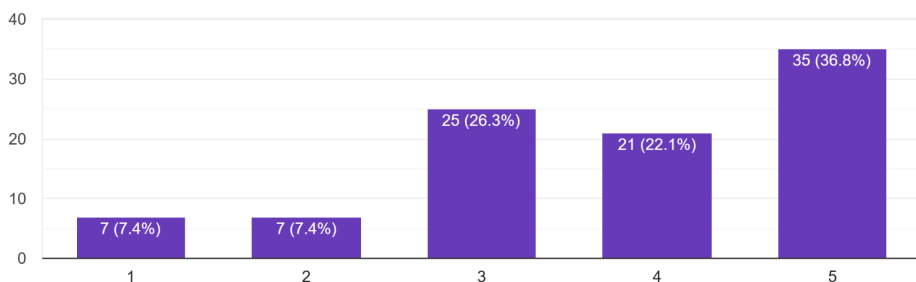
if yes, to what degree does it affect your academic life?

89 responses



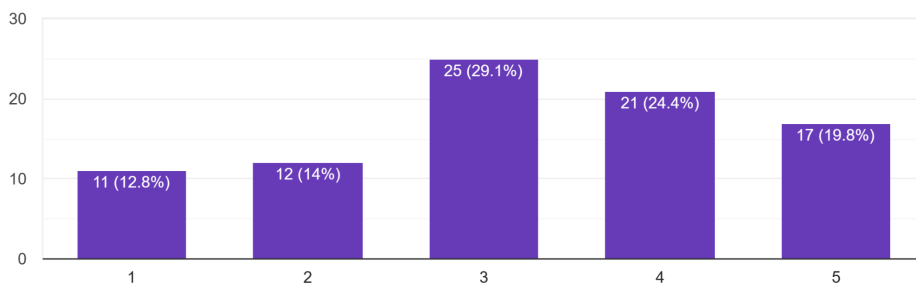
Do you suffer from stress and anxiety?

95 responses



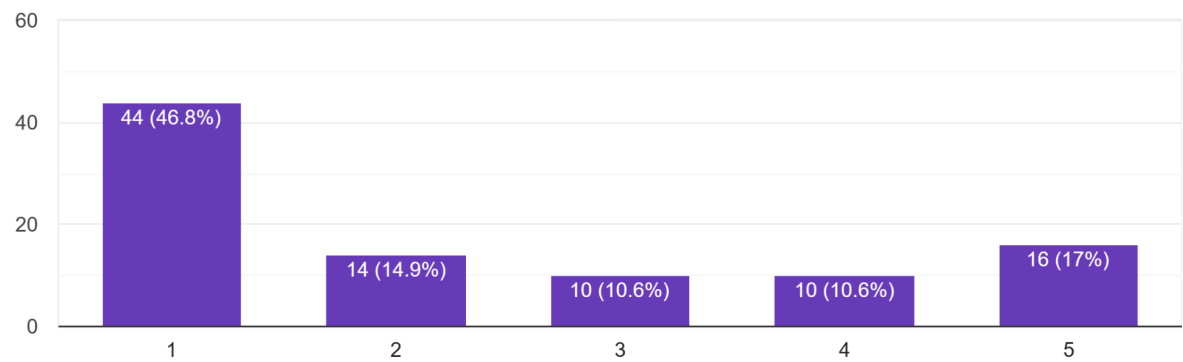
if yes, to what degree does it affect your physical health?

86 responses

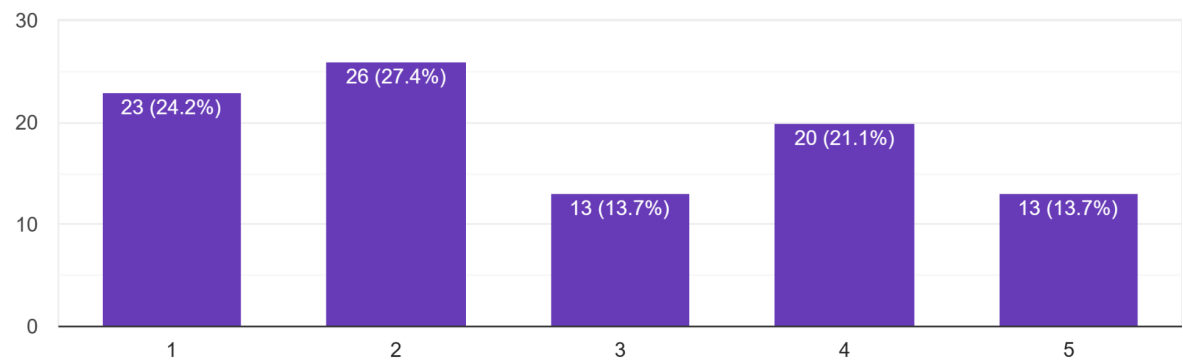


Additionally, although most people claim to be completely independent from unhealthy habits such as smoking(47%), a staggering 17% of young students admitted to being completely reliant on these habits. This lack of care for physical health is further proven by the nearly 50% of participants who almost never partake in exercise or physical activities.

Are you reliant on unhealthy habits to deal with your emotional distress? (for example smoking)  
94 responses



How often do you engage in physical exercise or activities?  
95 responses





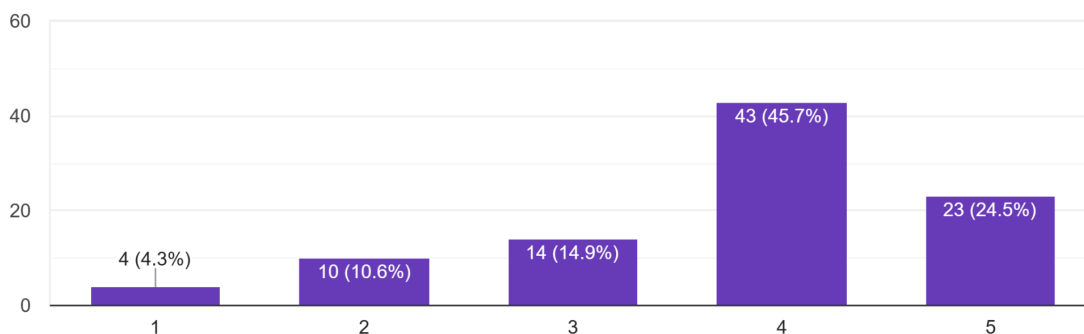
### c- Emotional Resilience

When asked about their coping mechanisms, answers such as prayer or sports were submitted. But more frequently, answers such as crying, overthinking and even giving up were also submitted. It is undeniable that the majority of tunisian students rely on unhealthy coping mechanisms on a day to day basis.

Still, when asked about their ability to rely on themselves to bounce back from trouble, a good majority rated themselves above average (about 70%).

Rate your ability to bounce back from challenging situations on your own

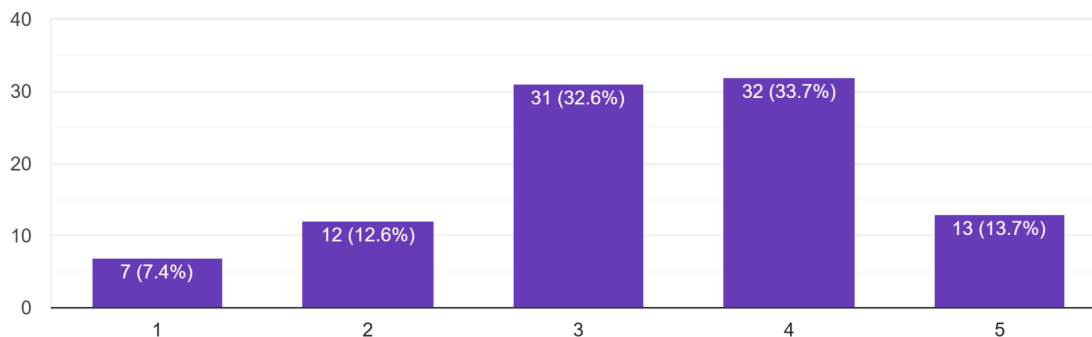
94 responses



And when asked to rate their families and friends on a scale from helpful to hurtful when it comes to personal issues, the majority found others to be a nuisance.

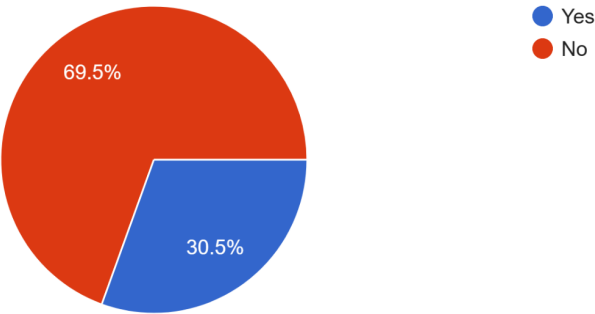
Do friends and family help alleviate your personal problems or are they more harmful?

95 responses



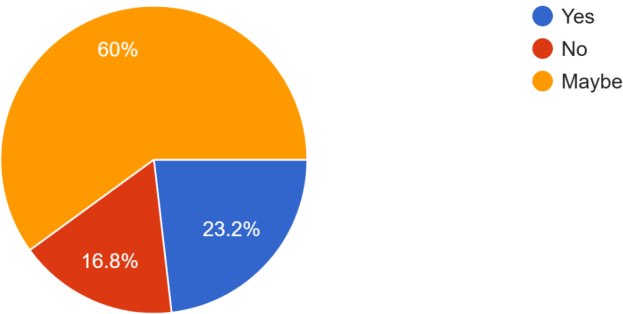
Yet despite being fairly good at relying on themselves, the tunisian student still struggles with unhealthy coping mechanisms, a lack of consideration for their mental health and they don't consider others as a reliable source of emotional support but in fact they find them harmful to their mental health. Additionally, when asked about what interventions these students feel would help them, the most common answer by far was therapy. Despite the call for therapy as a solution, when asked if they ever sought professional help nearly 70% of students said no.

Have you seeked professional help or counseling with emotional challenges before?  
95 responses



However, when asked if they were willing to seek professional help, only about 17% of students answered with a no, clearly pointing out the fact that this kind of help isn't accessible enough.

Are you willing to seek professional help regarding your setbacks and issues?  
95 responses

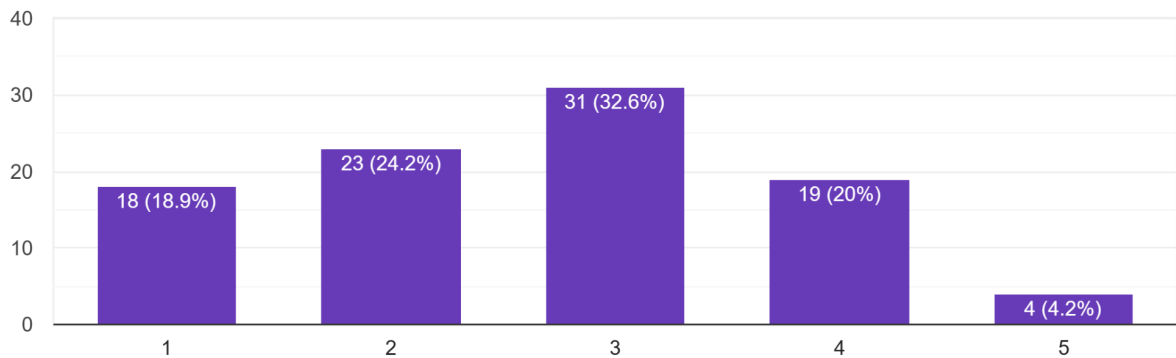


## d- Academic Success

Finally, we asked students to rate their satisfaction with their academic performance. And although most thought of it as average (about 33%), the fact that 19% of answers rated it the lowest possible rating while only 4% chose the highest rating is a clear sign of dissatisfaction with performance.

How satisfied are you with your academic performance?

95 responses



### 3) Describing the algorithm used to analyze data

#### Data Preparation:

- Imported necessary libraries (`pandas`, `seaborn`, `matplotlib`).
- Loaded the data into Google Colab.
- Explored the structure of the dataset using `df.head()`.

#### Data Cleaning:

- Checked for missing values and handled them (filled NaN values).
- Dropped irrelevant columns ('Timestamp', 'What is your grade/year of studies?').
- Encoded categorical variables using one-hot encoding.

#### Exploratory Data Analysis (EDA):

- Conducted a univariate analysis by visualizing the distribution of individual variables (e.g., age, gender) using histograms.
- Explored relationships between numerical variables using a correlation matrix.
- Visualized distributions and relationships for categorical variables (e.g., gender distribution).

#### Statistical Analysis:

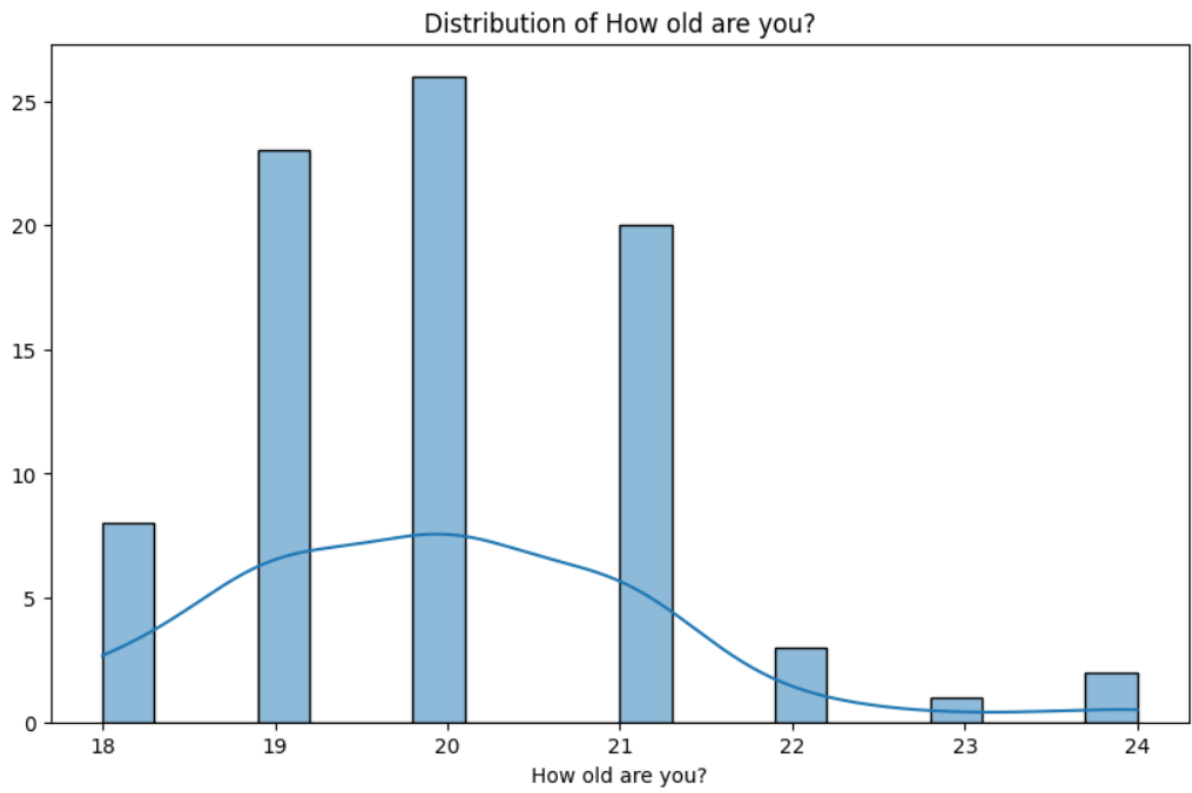
- Computed descriptive statistics (mean, count, etc.) for key variables.
- Conducted segmentation and grouping, such as grouping by grade/year of studies and calculating mean satisfaction.

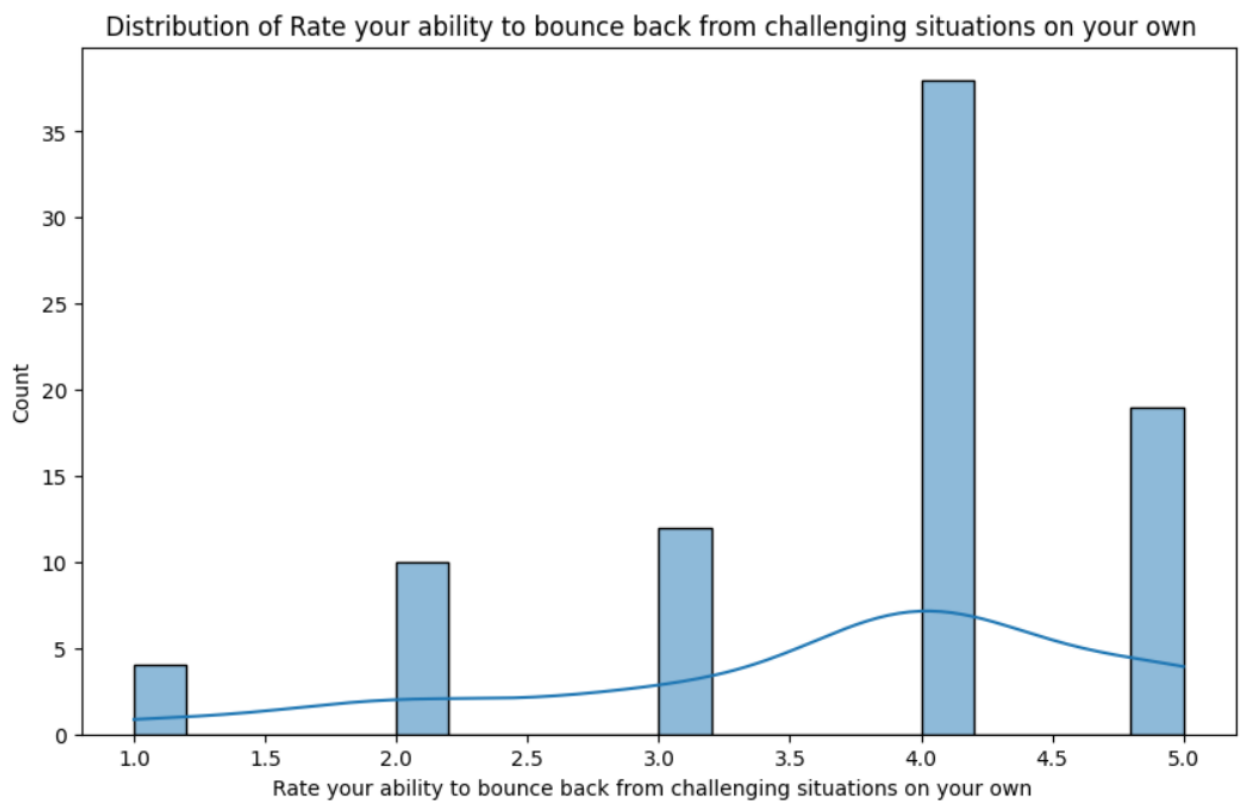
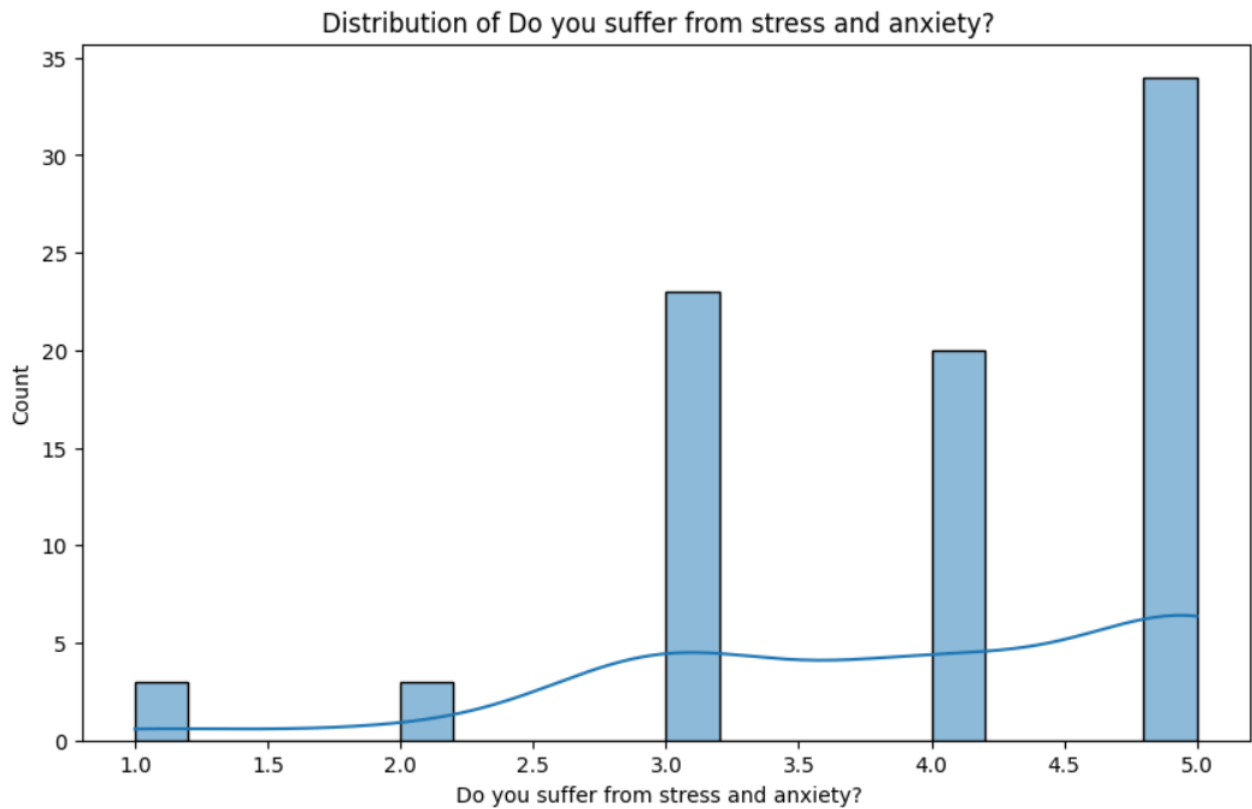
#### Machine Learning Model:

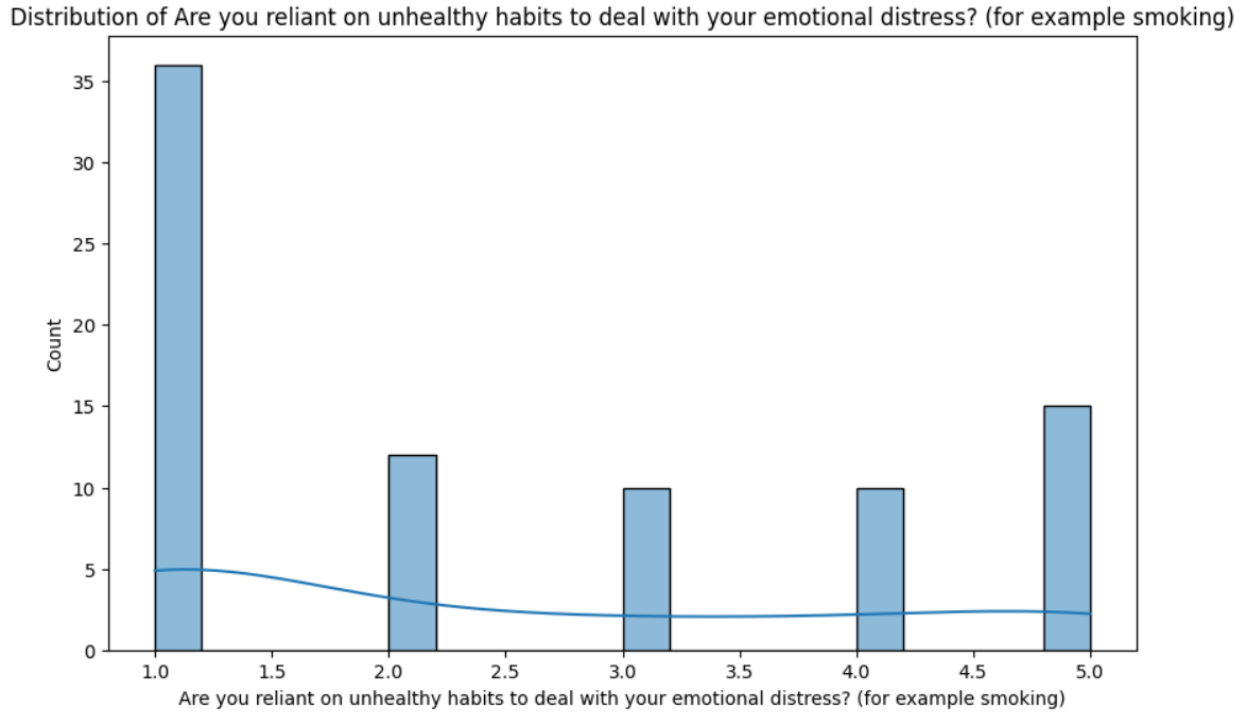
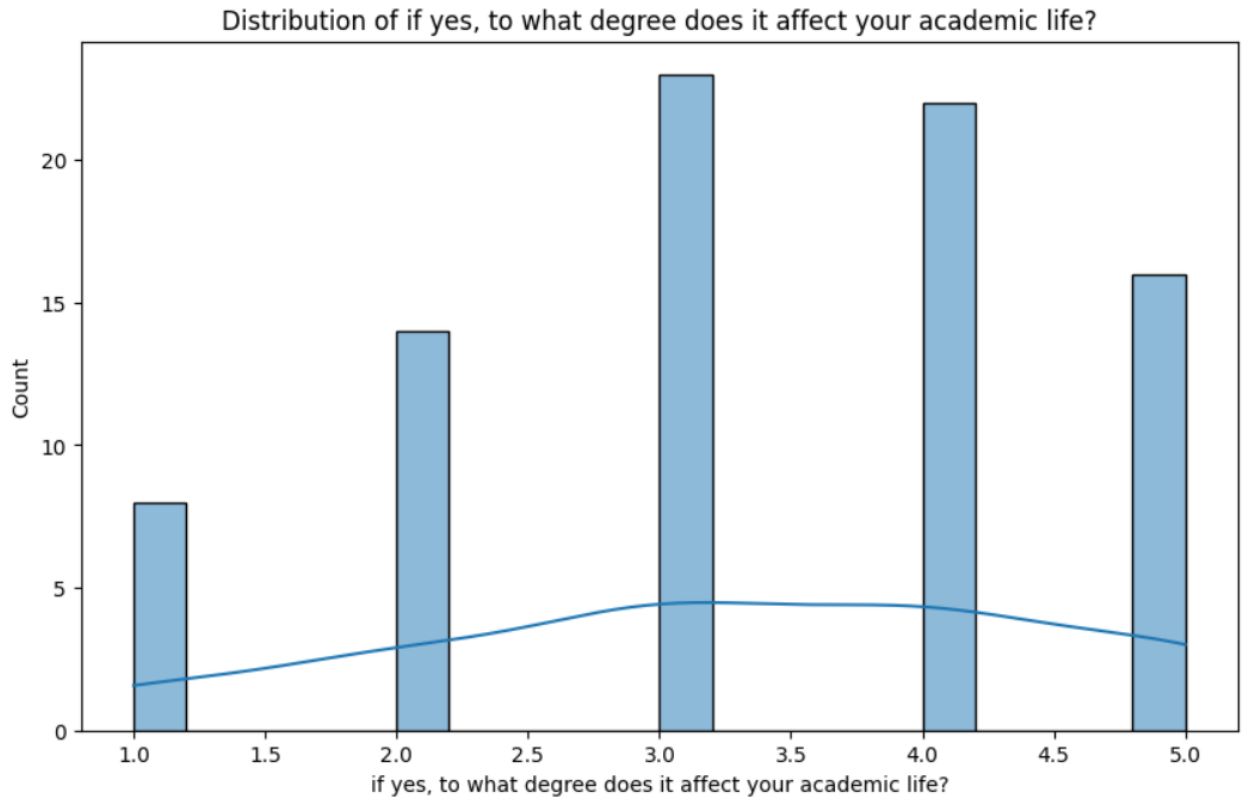
- Split the data into training and testing sets.
- Trained a Random Forest Classifier to predict satisfaction levels.
- Evaluated the model's performance using accuracy, classification report, and confusion matrix.

#### Visualization:

- Created visualizations, including histograms, a correlation matrix heatmap, and a confusion matrix with colors.



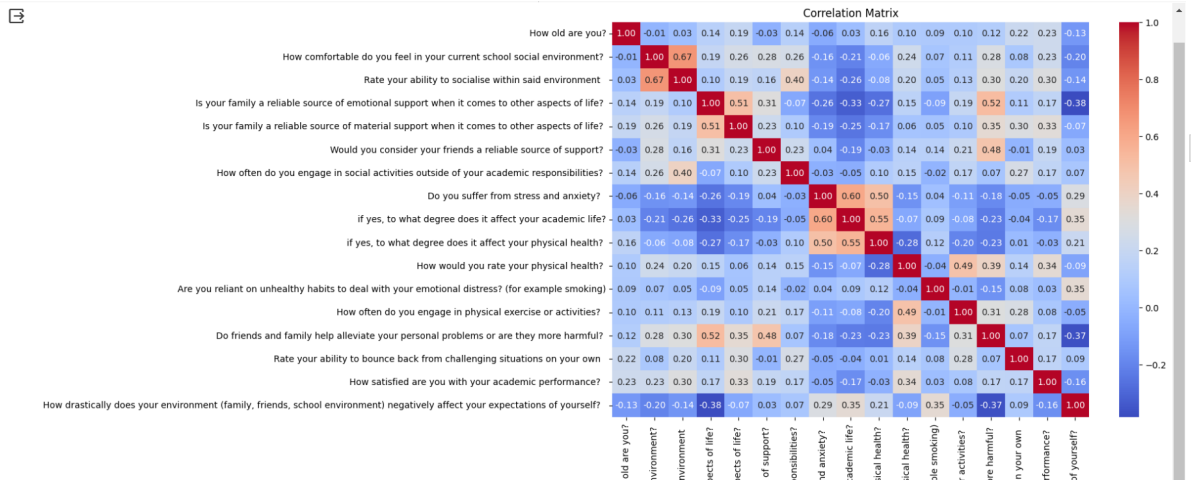




[5] df.head()

	Timestamp	How old are you?	What is your gender?	What is your grade/year of studies?	What is your university/school?	How comfortable do you feel in your current school social environment?	Rate your ability to socialise within said environment	Do you feel supported by family in your academic pursuit?	Is your family a reliable source of emotional support when it comes to other aspects of life?	Is your family a reliable source of material support when it comes to other aspects of life?	...	if yes, to what degree does it affect your physical health?	How would you rate your physical health?	Are you reliant on unhealthy habits to deal with your emotional distress? (for example smoking)	How often do you engage in physical exercise or activities?	Are you willing to seek professional help regarding your setbacks and issues?
0	11/28/2023 15:05:00	19	Male	L1	ISI	4	2	Yes	2	5	...	5.0	2	5.0	2	Maybe
1	11/28/2023 15:12:35	19	Female	L1	IPEIT	1	1	Yes	3	4	...	3.0	2	4.0	2	Maybe
2	11/28/2023 16:54:08	19	Female	L1	Isetma	4	4	Yes	4	5	...	NaN	5	1.0	4	No
3	11/29/2023 15:41:47	19	Male	L1	ISI	4	4	Yes	2	3	...	NaN	2	2.0	1	Maybe
4	11/29/2023 15:43:10	20	Female	L2	ISI	3	3	Yes	5	5	...	3.0	4	1.0	5	No

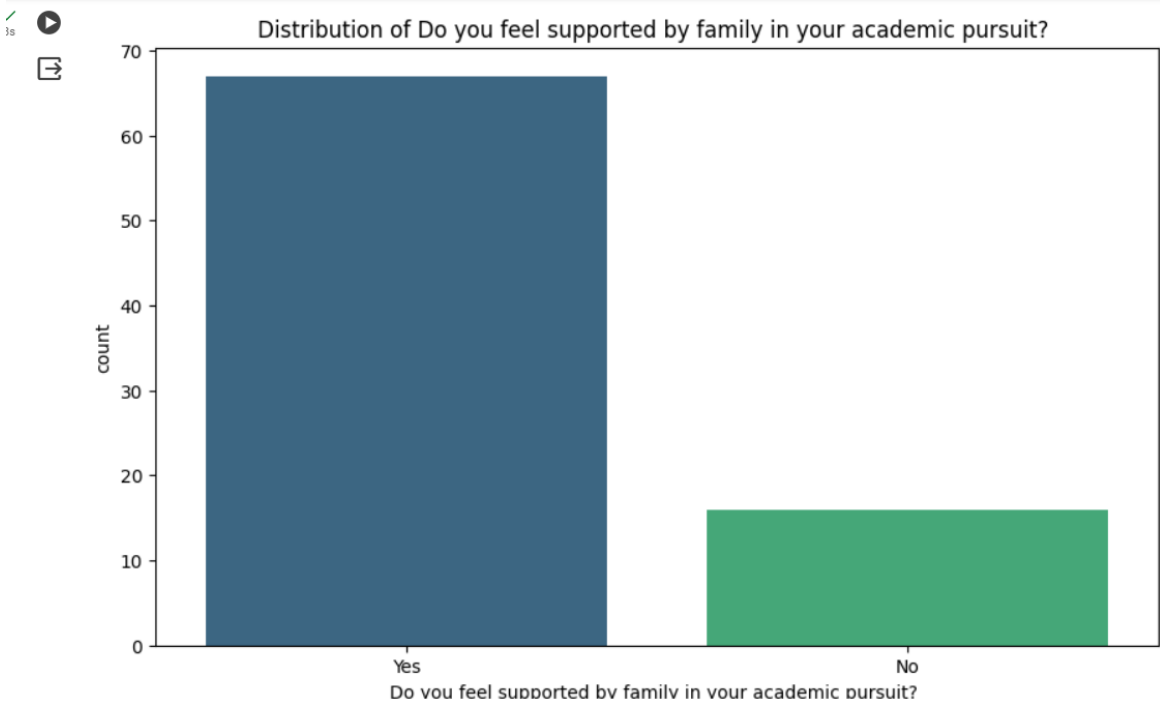
5 rows x 24 columns

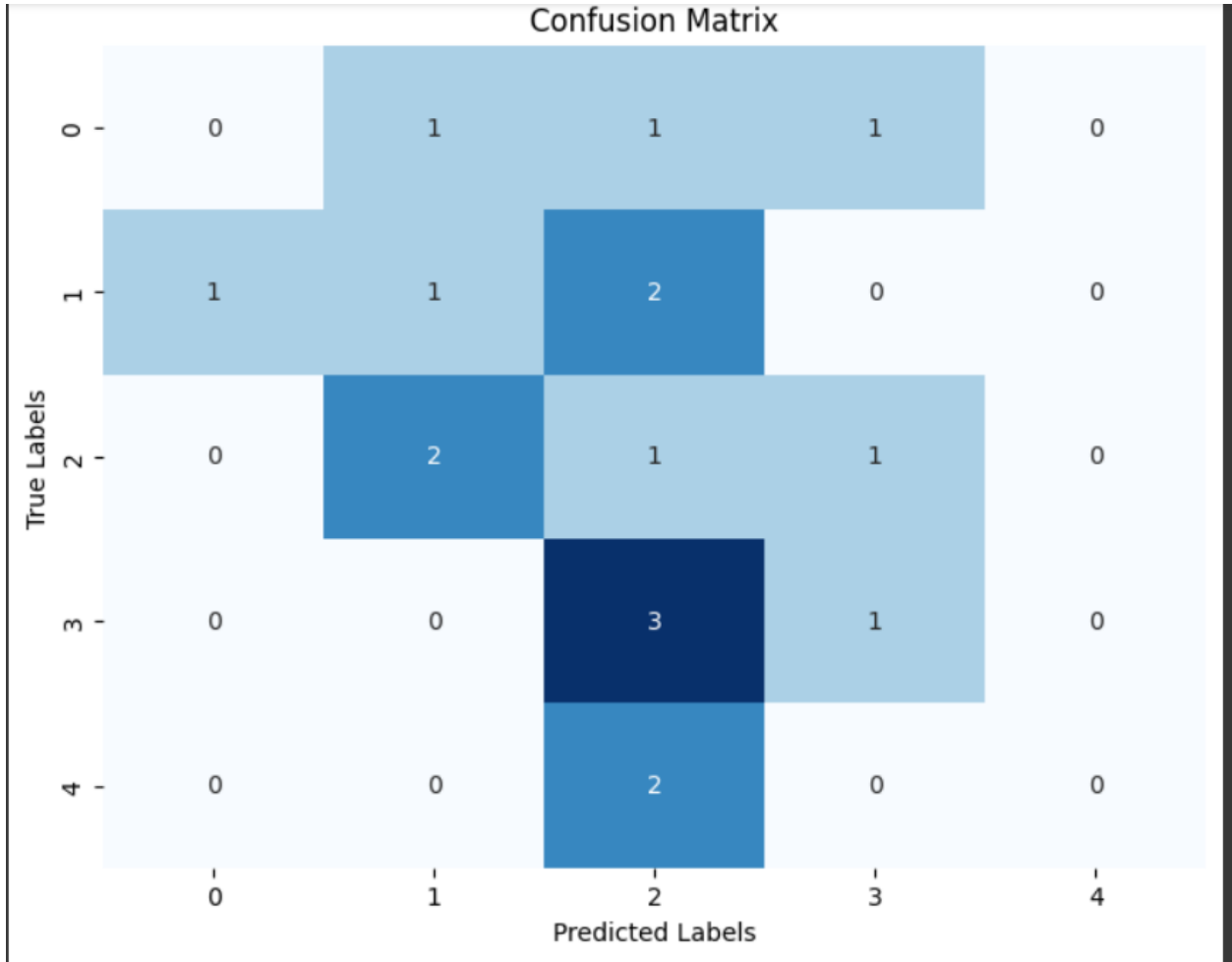




	Timestamp	How old are you?	What is your gender?	What is your grade/year of studies?	What is your university/school?	How comfortable do you feel in your current school social environment?	Rate your ability to socialise within said environment	Do you feel supported by family in your academic pursuit?	Is your family a reliable source of emotional support when it comes to other aspects of life?	Is your family a reliable source of material support when it comes to other aspects of life?	...	if yes, to what degree does it affect your physical health?	How would you rate your physical health?	Are you reliant on unhealthy habits to deal with your emotional distress? (for example smoking)	How often do you engage in physical exercise or activities?	Are you willing to seek professional help regarding your setbacks and issues?
0	11/28/2023 15:05:00	19	Male	L1	ISI	4	2	Yes	2	5	...	5.0	2	5.0	2	Maybe
1	11/28/2023 15:12:35	19	Female	L1	IPEIT	1	1	Yes	3	4	...	3.0	2	4.0	2	Maybe
2	11/28/2023 16:54:08	19	Female	L1	Isetma	4	4	Yes	4	5	...	NaN	5	1.0	4	No
3	11/29/2023 15:41:47	19	Male	L1	ISI	4	4	Yes	2	3	...	NaN	2	2.0	1	Maybe
4	11/29/2023 15:43:10	20	Female	L2	ISI	3	3	Yes	5	5	...	3.0	4	1.0	5	No

5 rows x 24 columns







```
[ ] #Segmentation by Family Support in Academic Pursuit
family_support_grouped = df.groupby('Do you feel supported by family in your academic pursuit')['How satisfied are you with your academic performance?'].mean()
print(family_support_grouped)

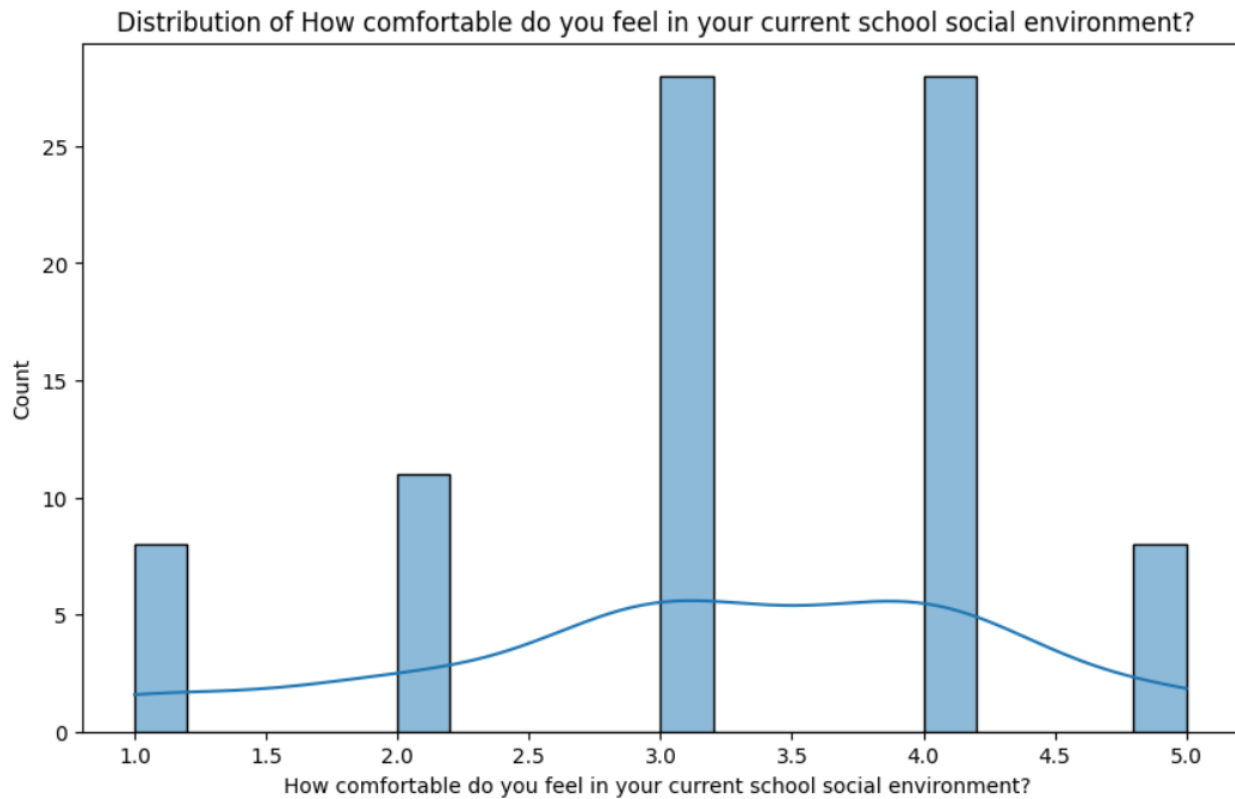
Do you feel supported by family in your academic pursuit?
No    2.375000
Yes    2.686567
Name: How satisfied are you with your academic performance?, dtype: float64

[ ] #Segmentation by Engagement in Social Activities
social_activities_grouped = df.groupby('How often do you engage in social activities outside of your academic responsibilities')['How satisfied are you with your academic performance?'].mean()
print(social_activities_grouped)

How often do you engage in social activities outside of your academic responsibilities?
1    2.307692
2    2.545455
3    2.692308
4    2.478261
5    3.300000
Name: How satisfied are you with your academic performance?, dtype: float64

[ ] #Segmentation by Stress Level
stress_grouped = df.groupby('Do you suffer from stress and anxiety?')['How satisfied are you with your academic performance?'].mean()
print(stress_grouped)
```





#### 4- Our solution

UniWell, your dedicated ally in academic and emotional well-being, provides a nurturing space for students to thrive. Through personalized support, resources, and a caring community, UniWell aims to enhance the university experience, helping students navigate challenges and fostering a holistic approach to success ; and this is what our solution looks to accomplish:

- Exploring Student life.
- Academic Path
- Enhancement
- Psychological Help
- Recommendations Hub
- Student Testimonials and Success Stories
- Instructor Presence
- UniWell-Community

## 5- Conclusion

Overall, the data paints tunisian students as trying to be emotionally independent due to societal norms, which is what leads them to harmful habits. As for solutions, from their perspective the most important things would be lowering the academic expectations and workload, or providing them with easier ways to contact professional help due to the stigma surrounding that topic in our society.