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Introduction and Question

Depression and anxiety disorders develop in individuals during adolescence and early childhood. Sex differences are prominent in how these mood disorders may emerge, as varying biological, physical, social expectations, and reproductive hormones are relevant to developing depression and/or anxiety. In our research, we look deeper into how gender affects whether college students have depression and anxiety. We predict that females will have higher reported rates of depression and anxiety, and therefore are more likely to seek treatment.

Data Description and Sources

The data was collected from students at the International Islamic University in Malaysia. It was conducted by a Google Forms survey of these students in order to examine their current academic situation and mental health in 2020. The dataset was loaded onto a website, Kaggle, and appears not to have any listed authors, but only the owner of the dataset. The individuals are numbered by the timestamp at which they filled out the survey. Therefore, the only data cleaning we had to do was change the timestamp of when people answered into a participant number. The other questions within the survey ask about many identifying factors: age, school year, CGPA, major, and marital status.

Methodology

Our General Linear model:

```
# Data operations here
data["gender_binary"] = data["Choose your gender"].str.lower().map({
    "male": 0,
    "female": 1
})
data['depression_binary'] = data['Do you have Depression?'].map({
    'Yes': 1,
    'No': 0
})
data['anxiety_binary'] = data['Do you have Anxiety?'].map({
    'Yes': 1,
    'No': 0
})
data.head()

model = smf.ols('gender_binary ~ depression_binary', data).fit()
print(model.summary().tables[1])

=====
            coef      std err          t      P>|t|      [0.025      0.975]
=====
Intercept      0.6970      0.054     12.955      0.000      0.590      0.804
depression_binary  0.1316      0.091      1.440      0.153     -0.050      0.313
=====
```

```

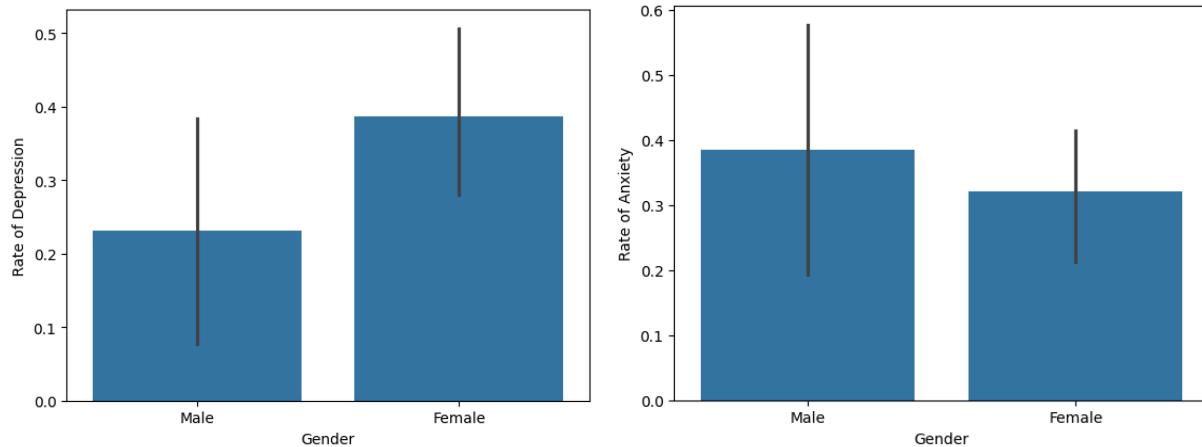
model = smf.ols('gender_binary ~ anxiety_binary', data).fit()
print(model.summary().tables[1])

=====
```

	coef	std err	t	P> t	[0.025	0.975]
Intercept	0.7612	0.054	14.134	0.000	0.654	0.868
anxiety_binary	-0.0553	0.093	-0.596	0.553	-0.239	0.129

Within the model, we separated the recorded genders, male (0) and female (1), onto either side of the graph to represent the number of those participants. We added in a “depression binary” to display the rate at which individuals had depression in comparison with the other gender. The limitations of our study are marked by the 101 participants who filled out the survey in Malaysia and therefore do not accurately represent the entire student body of around 27,000, nor the United States’ college student population.

Results and Analysis



Out of the 101 participants, females reported feeling depressed or having depression more than men. After marking and coding the dataset, male = 0 and female = 1, and depression was coded as a binary outcome, our regression model allowed us to estimate how gender relates to reported depression. The 0.6970 intercept represents the predicted probability of depression for males, the reference group. The coefficient for females having depression was at 0.1316, indicating that being female increases the predicted probability of reporting depression by about 0.13 compared to males. This positive coefficient aligns with our hypothesis that females would report higher rates of depression. Although the significance is slight, the direction of the relationship supports existing literature suggesting female students experience or report depressive symptoms at higher rates than their male counterparts.

Conclusion

Overall, our findings suggest a gender-related pattern in reported depression among this sample of university students, with females showing slightly higher predicted rates than males.

These results reinforce the importance of considering gender when developing mental health studies and support on college campuses. This highlights the need for accessible, gender-sensitive interventions that address the emotional and psychological needs of all students.

References:

Altemus, Margaret et al. "Sex differences in anxiety and depression clinical perspectives."

Frontiers in neuroendocrinology vol. 35,3 (2014): 320-30.

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Islam, Shariful MD. "Student Mental Health." *Kaggle*, 2020. <https://www.kaggle.com/datasets/shariful07/student-mental-health>. Accessed 5 December 2025

Slideshow presentation

<https://docs.google.com/presentation/d/1vWon0pzF8bkPlkhR-y98pxCpB52mC1ELg7JagyFzR-0/edit?usp=sharing>