

International University of Sarajevo



IUS student eating habits and lifestyle

Statistical Modelling

(Project report)

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1. Introduction and Motivation

University life significantly impacts students' daily routines and lifestyle choices, particularly regarding eating habits and health behaviors. This study was motivated by curiosity about behavioral patterns that shape IUS students' experiences and how they manage fundamental aspects of daily life such as nutrition and wellness. The initial motivation stemmed from personal observations of inconsistent eating patterns among university students, particularly around breakfast consumption and caffeine intake. These observations raised questions about whether such behaviors were individual choices or broader patterns shared across the student body. The investigation expanded to explore additional lifestyle factors including exercise and sleep patterns, however the focus remained on eating patterns and stress. This research offered an opportunity to analyze IUS community from within, providing authentic insights into IUS students' lived experiences while contributing to broader understanding of university student lifestyle patterns.

2. Defined Hypotheses

2.1. Student Stress Level Vs Moderate Stress (One-sample t-test)

H_0 (null hypothesis): Mean stress level of IUS students is 3.0 (moderate stress).

H_1 (alternative hypothesis): Mean IUS student stress level is different from moderate stress (3.0).

Note: Stress rated on a 5-point scale (1 = Not stressed, 5 = Extremely stressed).

2.2. Stress Level and Meal Skipping Behavior (Two-sample t-test)

H_0 : There is no difference in mean stress levels between students who skip meals due to stress/busy schedule and those who do not skip meals.

H_1 : Students who skip meals due to stress/busy schedule have significantly higher mean stress levels than those who do not skip meals.

2.3. Gender Differences in Stress Levels (Two-sample t-test)

H_0 : No difference in stress levels between males and females.

H_1 : There is a difference in stress levels between males and females.

2.4. Breakfast Skipping Proportion (One-sample proportion test)

H_0 : The proportion of IUS students who skip breakfast is the same as young adults nationally.

H_1 : The proportion of IUS students who skip breakfast is different from young adults nationally.

Note: Students responses were tested against the CDC benchmark showing that 23.4% of young adults (ages 20-39) skip breakfast on a given day (Sliwa et al., 2024).

3. Data Description and Assumptions

Data was collected through an anonymous online survey via Microsoft Forms, administered to 70 IUS students over 9 days. The study employed mixed convenience sampling through two channels: (1) survey links posted in student groups and course Teams channels, and (2) QR codes distributed to randomly encountered students across campus locations (cafeteria, library, hallways) at various times. This dual approach aimed to reach a diverse cross-section while reducing selection biases. Additionally, the survey was limited to one response per student. The sample shows reasonable gender and academic year distribution, with notable overrepresentation of FENS students (64.3%) and sophomores (57.1%). The FENS overrepresentation aligns with it being IUS's largest faculty, although FLW and FEDU students are absent. Regarding the assumptions made, it is assumed the sample is

random due to the sampling techniques used, independent as each person's response did not impact other people's responses, and data follows approximately normal distribution (due to the sample size).

Several limitations should be acknowledged. *Sampling biases*: While the mixed approach reduced selection bias, online distribution may have favored digitally active students, and the high proportion of sophomores may underrepresent freshman and senior experiences. *Self-report limitations*: Anonymous self-reported data may still be subject to social desirability bias, where participants provide responses they perceive as more acceptable rather than entirely accurate reflections of their behavior. *Sample size limitations*: The 70-participant sample size limits statistical power for detecting smaller effects or detailed subgroup analyses. *Temporal scope*: Data represents a snapshot that may not capture seasonal variations or differences between regular study periods and exam periods. Despite these limitations, the dataset provides valuable insights into IUS student lifestyle patterns and serves as a foundation for understanding eating habits within this university context.

4. Descriptive Statistics and Visualization

The sample consists of 70 IUS students, predominantly female (55.7%) and enrolled in FENS (64.3%). Quick summary of the sample descriptive statistics can be seen in the tables below, followed by additional visuals regarding the demographics.

Variable	Mean	Median	Mode	Std Dev	Variance	Range
Meals Per Day	2.16	2.00	2.0	0.56	0.31	2.00
Caffeine Frequency	6.81	5.00	2	6.30	39.63	29.00
Stress Level	3.81	4.00	4	1.07	1.14	4.00

Table 1, Continuous Variables Summary

Variable	Category	Count	Percentage
Primary Food Location	Home (self/roommate cooked)	57	81.4%
	Campus cafeteria	6	8.6%
	Fast food	3	4.3%
	Delivery apps	2	2.9%
	Sit-down restaurants	2	2.9%
Primary Caffeine	Coffee	30	42.9%
	Energy drinks	12	17.1%
	Soft drinks	11	15.7%
	Nothing	9	12.9%
	Tea	8	11.4%
Breakfast Daily	No	36	51.4%
	Yes	34	48.6%

Table 2, Food and Eating Behaviors

Variable	Category	Count	Percentage
Skip Meals When Stressed	Yes	45	64.3%
	No	25	35.7%
Eating Changes During Exams	Yes	49	70.0%
	No	21	30.0%
Physically Active	No	37	52.9%
	Yes	33	47.1%

Table 3, Stress and Eating Patterns

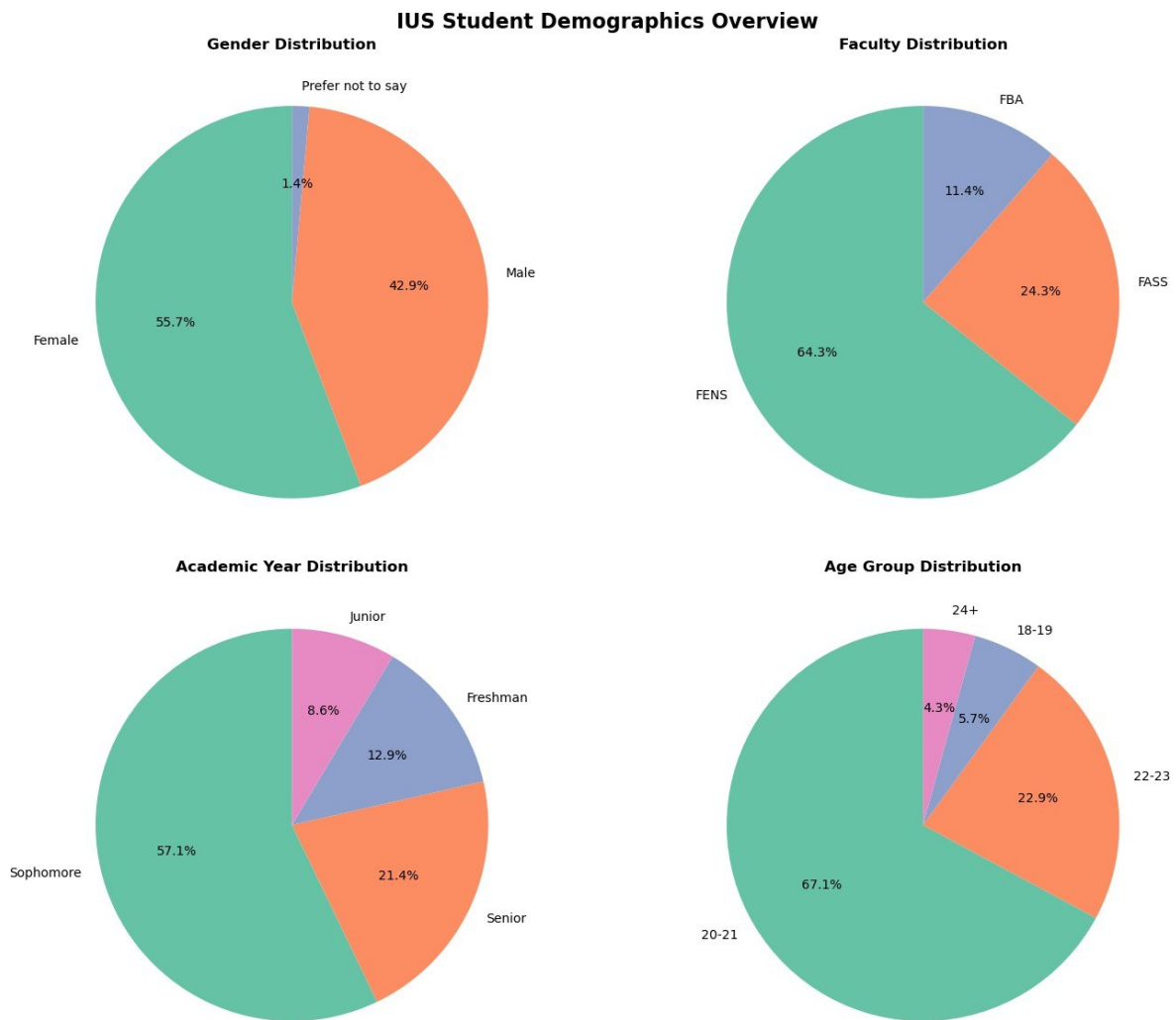


Figure 1, Pie charts showing the distributions of gender, faculties, academic years, and age groups in the sample

5. Statistical Analysis and Hypothesis Testing

All statistical tests were conducted at a significance level of $\alpha = 0.05$. Detailed calculations and software outputs are provided in the Appendix. The following analyses were performed:

Hypothesis 1: Student Stress Level vs. Moderate Stress

Test Used: One-sample t-test

H_0 (Null Hypothesis): $\mu = 3.0$ (mean stress level equals moderate stress)

H_1 (Alternative Hypothesis): $\mu \neq 3.0$ (mean stress level differs from moderate stress)

Test Statistic: $t = 6.3838$

p-value: $p = 0.0000$

Decision: Since $p < 0.05$, we reject H_0 . The mean stress level of IUS students is significantly different from moderate stress. Specifically, students reported stress levels higher than the moderate level.

Hypothesis 2: Stress Level and Meal Skipping Behavior

Test Used: Two-sample t-test

H_0 : $\mu_1 = \mu_2$ (no difference in mean stress levels between meal skippers and non-skippers)

H_1 : $\mu_1 > \mu_2$ (meal skippers have higher stress levels)

Test Statistic: $t = 2.6318$

p-value: $p = 0.0064$

Decision: Since $p < 0.05$, we reject H_0 . Students who skip meals due to stress have significantly higher stress levels than those who do not.

Hypothesis 3: Gender Differences in Stress Levels

Test Used: Two-sample t-test

$H_0: \mu_{\text{male}} = \mu_{\text{female}}$ (no difference in stress levels between genders)

$H_1: \mu_{\text{male}} \neq \mu_{\text{female}}$ (difference exists between genders)

Test Statistic: $t = -2.0279$

p-value: $p = 0.0479$

Decision: Since $p < 0.05$, we reject H_0 . There is a significant difference in stress levels between males and females. Specifically, females report significantly higher stress than males.

Hypothesis 4: Breakfast Skipping Proportion

Test Used: One-sample proportion test

$H_0: p = 0.234$ (proportion equals national average)

$H_1: p \neq 0.234$ (proportion differs from national average)

Test Statistic: $z = 4.6920$

p-value: $p = 0.0000$

Decision: Since $p < 0.05$, we reject H_0 . The proportion of IUS students who skip breakfast differs significantly from the national average of 23.4%. Specifically, it is higher.

6. Discussion and Interpretation

The statistical analyses reveal a concerning picture of stress and its impact on eating behaviors among IUS students. Four significant hypotheses yielded results that paint a consistent narrative about a stress-food cycle in IUS student population.

IUS students report stress levels significantly above moderate thresholds, suggesting our campus faces a genuine stress epidemic. This elevated stress creates a problematic feedback loop: students who skip meals due to stress report significantly higher stress levels than those who maintain regular eating patterns. Rather than being simply a time management issue, meal skipping appears to exacerbate stress through poor nutrition and blood sugar fluctuations, creating a self-reinforcing cycle.

This pattern manifests prominently in breakfast behaviors across campus. Breakfast skipping occurs at rates significantly higher than national averages, which is particularly concerning since breakfast supports cognitive function and energy regulation crucial for academic success. Additionally, female students experience significantly higher stress than males, highlighting gender disparities in stress experiences that warrant targeted attention.

It is important to note how these findings interconnect. IUS students are trapped in self-destructive patterns where stress undermines the very behaviors that could help manage it. The combination of elevated stress levels, stress-related meal skipping behaviors, and above-average breakfast skipping rates suggests our campus culture may inadvertently normalize unhealthy coping mechanisms. Based on these findings, we can conclude that IUS students face above-average stress levels that directly impact their eating behaviors. The university community would benefit from stress management programs that specifically address the connection between stress and nutrition.

7. References

Sliwa, S. A., Merlo, C. L., McKinnon, I. I., Self, J. L., Kissler, C. J., Saelee, R., & Rasberry, C. N. (2024). *Skipping Breakfast and Academic Grades, Persistent Feelings of Sadness or Hopelessness, and School Connectedness Among High School Students - Youth Risk Behavior Survey, United States, 2023*. MMWR Supplements, 73(4), 87–93. <https://doi.org/10.15585/mmwr.su7304a10>

8. Appendix

Data Availability

The survey data and analysis notebooks are not publicly linked to protect participant privacy. Aggregated results and code used for analysis are provided in the project repository. Data can be shared upon reasonable request.