

SAS Project Proposal : Caffeine Consumption and Mental Health of UMD students

I. Introduction:

For many college students, caffeine beverages serve as a sacred source of energy to start the day off and keep them powered throughout the day. Based on various studies, caffeine improves people's ability to stay concentrated for a longer period of time and strengthens their energy levels. While some people simply enjoy the taste of caffeine beverages, the majority use caffeine to boost memory retention during their study and cope with academic and social stress.

This project aims to study whether there is a correlation between caffeine intake and mental illnesses such as anxiety and depression. Some of the questions that this project aims to answer are: Will the increase in caffeine intake lead to more symptoms of anxiety and depression? Will being diagnosed with a previous mental illness affect the level of caffeine intake? Will caffeine intake improve academic performance? Does higher caffeine consumption indicate higher stress levels? What are some of the perceived effects of caffeine consumption amongst students? Will the major of study be correlated with the amount of caffeine consumption? Does gender play a role in how much caffeine is consumed?

A survey consisting of questions about the student's demographics and mental health was conducted via Google forms. The survey was distributed to UMD students via Discord and GroupMe over the course of three days and a total of 66 responses were recorded.

The qualitative variables in the study include major, gender, race, year in school, living arrangement, type of caffeine beverage consumed(i.e coffee, tea, soda, energy drink, etc.), level of depression(measured by PHQ-9 Score), level of anxiety(measured by GAD-7 Score), and level of stress (measured by Perceived Stress Scale). The quantitative variables in the study include GPA, number of days they drink caffeine beverages in a week, how many cups they drink on the days they consume a caffeine beverage, level of caffeine intake per week(estimated by the size of cups), and how much caffeine they consume in a week(measured in mg). Small cup contains 180 mg of caffeine, medium contains 260 mg of caffeine, large contains 330mg of caffeine, and extra large contains 415 mg. A soda bottle usually contains about 30-50 mg of caffeine. CDC recommends a maximum of 400 mg/day(i.e 4 or 5 cups) since consuming too much caffeine can lead to symptoms like insomnia, anxiety, dysphoria, and nausea.

In the survey(Q12), students were asked how frequently they have the stated symptoms

of depression. The responses were Not at all, Several days, More than half the days, Nearly every day. Each response was assigned a score of 0,1,2,3 respectively. After adding up the scores for each question, we obtain the PHQ-9 score which measures the severity of depression.

The interpretation of PHQ-9 score is as follows:

Score of 0-4 indicates none-minimal depression, 5-9 indicates mild depression, 10-14 indicates moderate depression, 15-19 indicates moderately severe depression, score of 20-27 indicates severe depression.

(Note that in the data table, I labeled the PHQ-9 questions as Q1PHQ...Q9PHQ)

In the survey(Q13), students were asked how frequently they have the stated symptoms of anxiety. The responses were Not at all, Several days, More than half the days, Nearly everyday. Each response was assigned a score of 0,1,2,3 respectively. After adding up the scores for each question, we obtain the GAD-7 score which measures the severity of depression.

The interpretation of GAD-7 score is as follows:

Score of 0-4 indicates minimal anxiety, 5-9 indicates mild anxiety, 10-14 indicates moderate anxiety, score greater than 15 indicates severe anxiety.

(Note that in the data table, I labeled the GAD-7 questions as Q10GAD...Q16GAD).

Lastly, Q14 in the survey measures the level of perceived stress. The responses were Never, Almost Never, Sometimes, Fairly often, Very often. Each response was assigned a score of 0,1,2,3,4 respectively. After adding up the scores for each question, we obtain the PSS score which measures the perceived stress of the individual.

The interpretation of Perceived Stress Scale:

Score of 0-13 is low stress. Score of 14-26 is moderate stress. Score of 27-40 is high perceived stress.

(Note that in the data table, I labeled the Perceived Stress Scale questions as Q17PSS...Q26PSS).

Questionnaire Citations (for Depression, Anxiety, and PSS measurements)

Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) The Social Psychology of Health. Newbury Park, CA: Sage, 1988.

Kroenke, Kurt & Spitzer, Robert. (2002). The PHQ-9: A New Depression Diagnostic and Severity Measure. *Psychiatric Annals*. 32. 509-521. 10.3928/0048-5713-20020901-06.

Spitzer RL, Kroenke K, Williams JB *et al*. A brief measure for assessing generalized anxiety disorder: the GAD-7. *Arch Intern Med* 2006;166:1092–1097.

II. Copy of Blank Survey (conducted via Google Forms):

*****Survey is on the next page**

Caffeine Intake and Mental Health Survey

The purpose of this study is to investigate whether there is a correlation between the amount of caffeine consumption and the mental health of students at UMD. This survey is entirely anonymous and your responses will not be disclosed with anyone. Your contact information(i.e email) will not be recorded.

This survey will take around 5 minutes to fill out.

*** Required**

1. What is your major? *

2. Gender *

Mark only one oval.

☐ Female

☐ Male

☐ Other: _____

3. What is your year in school? *

Mark only one oval.

☐ Freshman

☐ Sophomore

☐ Junior

☐ Senior

4. Are you a: *

Mark only one oval.

☐ Commuter (live in other city or at home with parents)

☐ Dorm resident

☐ Nearby off-campus resident

5. What is your current GPA? *

6. How many days per week do you drink caffeine? Please give a numerical answer *

7. On those days you consume caffeine, how many cups do you drink? Please give a numerical answer. *

8. Which kind of caffeine beverage do you consume most often? *

Mark only one oval.

- ☐ Coffee
- ☐ Tea
- ☐ Soda/Soft Drinks
- ☐ Energy drinks
- ☐ Other: _____

9. What is the usual size of the cup you drink from? (i.e. what size do you often order?) *



Mark only one oval.

- ☐ XS (demi)
- ☐ S (short)
- ☐ M (tall)
- ☐ L (grande)
- ☐ XL (venti)
- ☐ Bottled/One size (e.g. soda or energy drinks)
- ☐ Other: _____

10. What is your main reason for consuming caffeine beverages? *

Mark only one oval.

- ☐ To stay awake in classes
- ☐ To increase concentration while studying
- ☐ For enjoyment, i.e. you like the taste
- ☐ To improve physical/athletic performance
- ☐ For social reasons (e.g. meetings, I go out on coffee dates with friends/boyfriend)
- ☐ For health reasons
- ☐ To feel less stressed about college life
- ☐ To feel less anxious
- ☐ To warm myself up
- ☐ For digestion after a meal
- ☐ Other: _____

11. Have you been diagnosed with anxiety or depression before? (please specify the illness if you have been diagnosed with other health issues) *

Mark only one oval.

- ☐ Anxiety
- ☐ Depression
- ☐ Both
- ☐ Undiagnosed
- ☐ Other: _____

12. Over the last two weeks, how often have you been bothered by these problems? *

Mark only one oval per row.

	Not at all	Several days	More than half the days	Nearly everyday
Lack of interest or pleasure in doing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling down, depressed or hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble falling or staying asleep, sleeping too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling tired or have no energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor appetite or overeating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling bad about yourself- that you are a failure or you have let your friends/family down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble concentrating on tasks (like reading, listening to lectures, watching videos)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moving or speaking so slowly other people could notice. Or being so fidgety that you have been moving around more than usual.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having thoughts of hurting yourself or that you would be better off dead	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Over the last two weeks, how often have you been bothered by the following problems? *

Mark only one oval per row.

	Not at all	Several days	More than half the days	Nearly everyday
Feeling nervous, anxious, or on the edge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Not being able to stop worrying about things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worrying too much about multiple/different things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble relaxing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being so restless you cannot sit still	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Becoming easily annoyed or irritated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling afraid something awful might happen	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Over the last two weeks, how often have you been bothered by these problems? *

Mark only one oval per row.

	Never	Almost Never	Sometimes	Fairly often	Very often
How often have you felt upset?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you felt that unable to control things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you felt nervous or stressed out?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you felt confident about your ability to handle personal issues?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you found that you could not cope with work/school?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you felt that you were on top of things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you felt angered because of things out of your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
How often have you felt difficulties were piling up so high you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. What's the main source of your stress? *

Mark only one oval.

- ☐ Academic (Homework, Projects, Exams)
- ☐ Family
- ☐ Health problems
- ☐ Break-up
- ☐ Death of loved one
- ☐ Financial
- ☐ Traumatic event
- ☐ Job-related(finding job post-graduation or stress of current job)
- ☐ Extra-curricular activities (Research, Clubs, Internships)
- ☐ Adjusting to environment
- ☐ Social (i.e not able to find friends or community that you belong to..etc)
- ☐ Other: _____

16. Do you believe drinking caffeinated beverages will help you feel better or make your symptoms go away? (1-Strongly disagree, 2-Disagree, 3-Neutral, 4-Agree, 5-Strongly agree) *

Mark only one oval.

	1	2	3	4	5
Strongly disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strongly agree					

17. Do you believe drinking caffeinated beverages will help you academically or help you study more efficiently? *

Mark only one oval.

☐ Yes

☐ No

This content is neither created nor endorsed by Google.

Google Forms

III. Data Review (only graphs/charts):

Note: Although caffeine levels can vary, I am using the caffeine level estimates on the Starbucks website based on the size of the cups and the caffeine level of a bottle of Coke for soda.

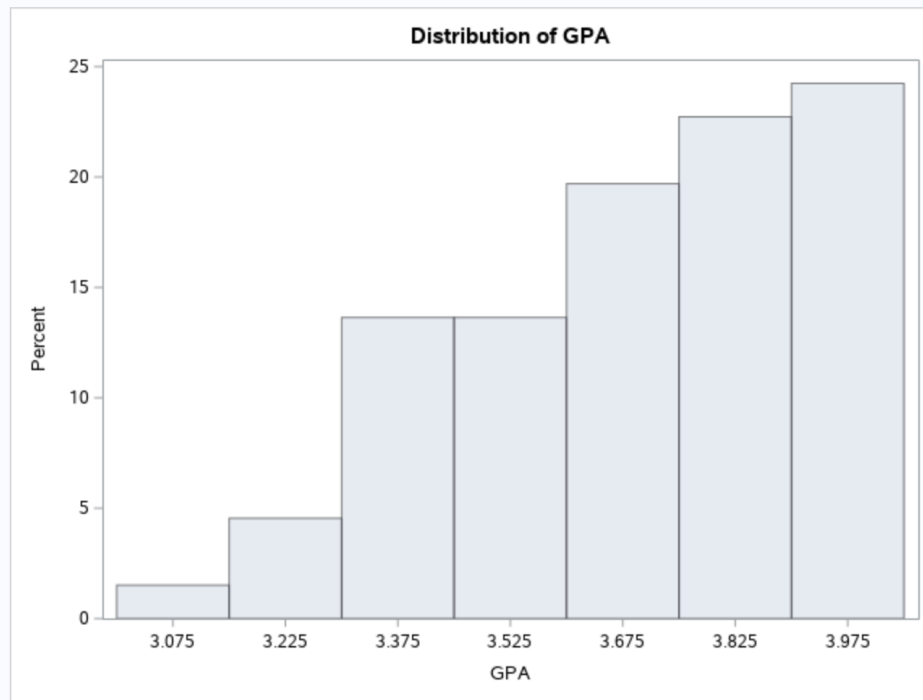
Quantitative variables:

- GPA
- How many days students drink caffeine beverages in a week (Days_Per_Wk)
- How many cups students drink on the days they consume a caffeine beverage (Cups)
- Level of caffeine intake per cup estimated by the size of cups (Caff_Lvl)
- How much caffeine they consume in a week measured in mg (Total_Caff_Wk)

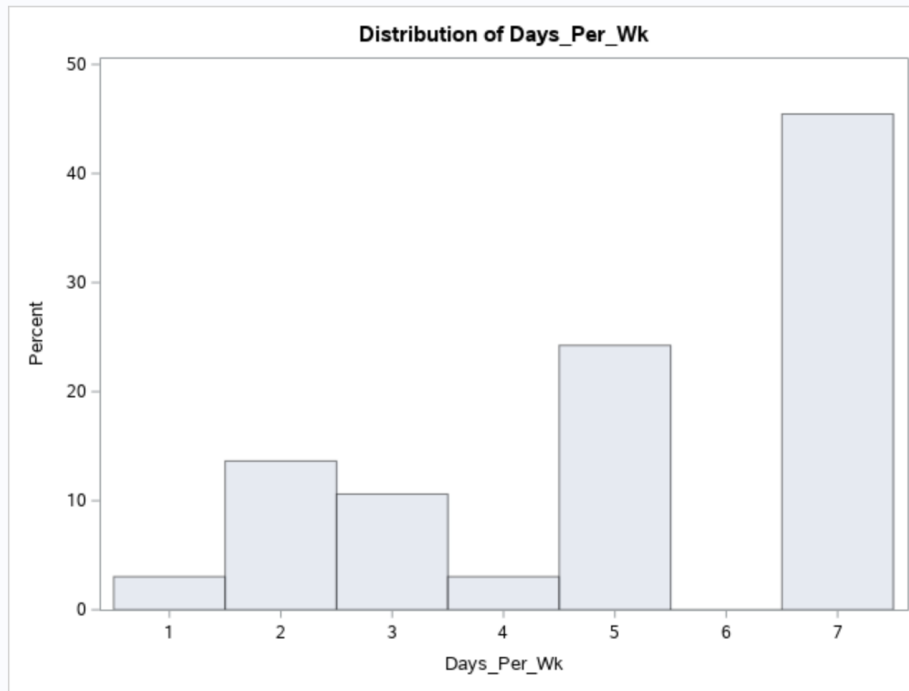
The MEANS Procedure

Variable	Mean	Median	Std Dev	Quartile Range	Maximum	Minimum
GPA	3.67	3.70	0.25	0.39	4.00	3.00
Days_Per_Wk	5.14	5.00	2.01	4.00	7.00	1.00
Cups	2.29	2.00	1.11	2.00	5.00	1.00
Caff_Lvl	213.73	260.00	103.88	80.00	330.00	34.00
Total_Caff_Wk	2713.61	2560.00	2087.15	3180.00	9100.00	34.00

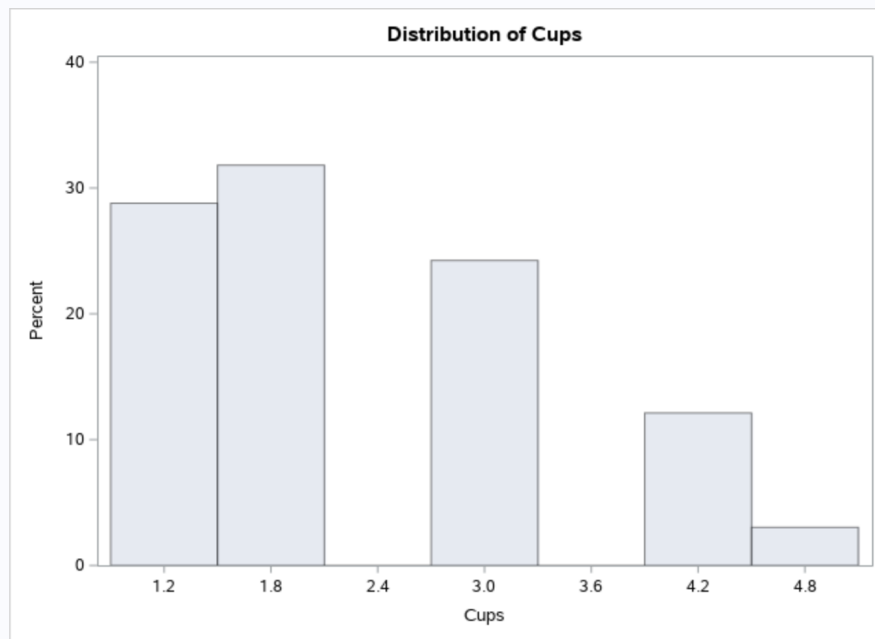
The UNIVARIATE Procedure



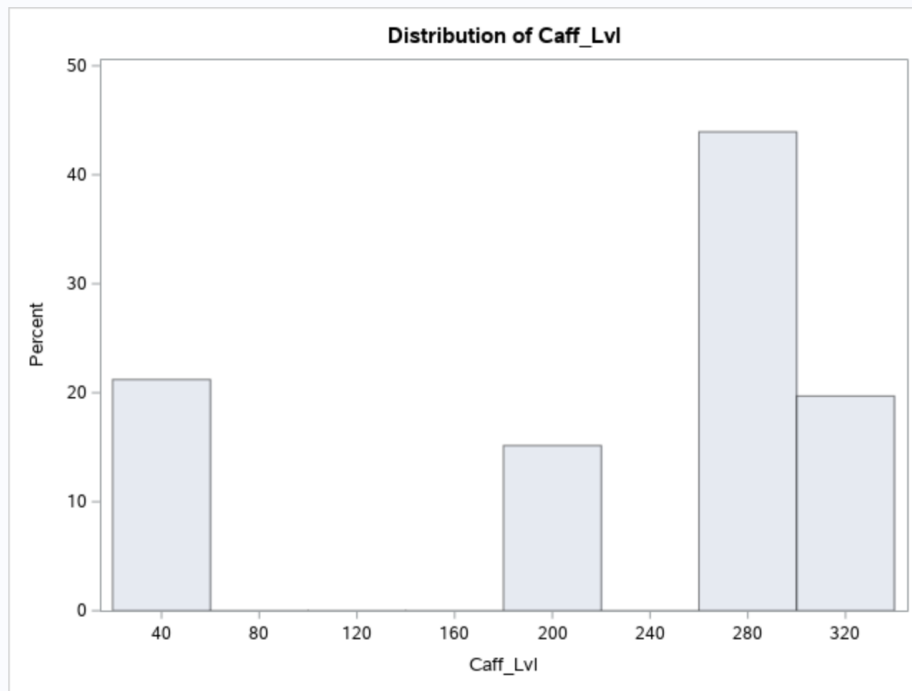
The UNIVARIATE Procedure



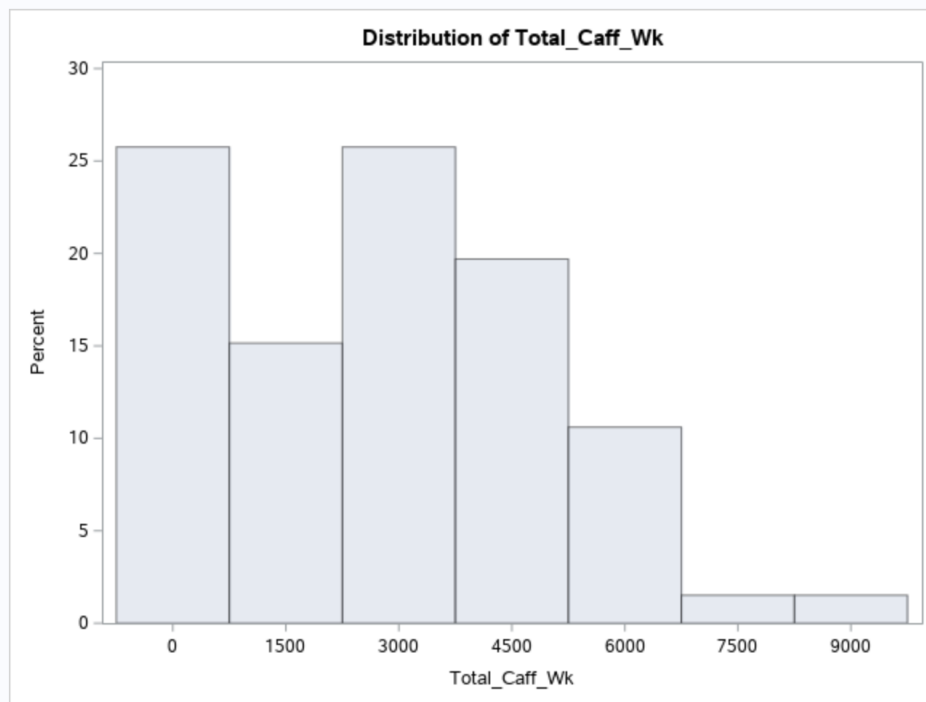
The UNIVARIATE Procedure



The UNIVARIATE Procedure



The UNIVARIATE Procedure



Qualitative Variables:

- Major
- Gender
- Race
- Year in school (Year)
- Reason for Consuming Caffeinated Beverages
- Living arrangement (Residence)
- Type of caffeine beverage consumed(coffee/ tea/soda/ energy drink/ other) –TYPE
- Whether you are diagnosed with an illness –DIAGNOSIS
- Source of Stress (Source_stress)
- Level of depression(measured by PHQ-9 Score) –Depr_Lvl
- Level of anxiety(measured by GAD-7 Score) -Anx_Lvl
- Level of stress (measured by Perceived Stress Scale) - Stress_Lvl
- Whether students believe caffeine beverages decreases symptoms of anxiety/depression/stress (Caff_Symp)
- Whether students believe caffeine beverages help them academically (Caff_Grades)

Frequency Tables:

The FREQ Procedure

MAJOR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Arts	3	4.55	3	4.55
Science and Math	14	21.21	17	25.76
Business	3	4.55	20	30.30
Engineering and CS	25	37.88	45	68.18
Social Science and Hum	21	31.82	66	100.00

GENDER	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Female	35	53.03	35	53.03
Male	31	46.97	66	100.00

RACE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Asian	30	45.45	30	45.45
Black	8	12.12	38	57.58
White	28	42.42	66	100.00

YEAR	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Freshman	8	12.12	8	12.12
Sophomore	11	16.67	19	28.79
Junior	21	31.82	40	60.61
Senior	26	39.39	66	100.00

RESIDENCE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Commuter	18	27.27	18	27.27
Dorm Resident	19	28.79	37	56.06
Nearby off campus	29	43.94	66	100.00

TYPE	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Coffee	43	65.15	43	65.15
Tea	8	12.12	51	77.27
Soda	13	19.70	64	96.97
Energy Drinks	2	3.03	66	100.00

REASON	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Stay awake in classes	15	22.73	15	22.73
Other	5	7.58	20	30.30
Increase concentration	10	15.15	30	45.45
Enjoyment	13	19.70	43	65.15
Socializing	2	3.03	45	68.18
Health	2	3.03	47	71.21
To feel less stressed	17	25.76	64	96.97
To feel less anxious	2	3.03	66	100.00

DIAGNOSIS	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Anxiety	7	10.61	7	10.61
Depression	1	1.52	8	12.12
Both	2	3.03	10	15.15
Undiagnosed	53	80.30	63	95.45
Other	3	4.55	66	100.00

Source_stress	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Academic	42	63.64	42	63.64
Trouble adjusting to college	1	1.52	43	65.15
Social	2	3.03	45	68.18
Family	1	1.52	46	69.70
Health	4	6.06	50	75.76
Breakup	1	1.52	51	77.27
Financial	4	6.06	55	83.33
Job related	8	12.12	63	95.45
Extracurricular activities	3	4.55	66	100.00

Caff_Symp	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Strongly disagree	4	6.06	4	6.06
Disagree	12	18.18	16	24.24
Neutral	7	10.61	23	34.85
Agree	26	39.39	49	74.24
Strongly agree	17	25.76	66	100.00

Caff_Grades	Frequency	Percent	Cumulative Frequency	Cumulative Percent
No	24	36.36	24	36.36
Yes	42	63.64	66	100.00

Depr_Lvl	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Mild	2	3.03	2	3.03
Mod	28	42.42	30	45.45
Mod Sev	28	42.42	58	87.88
Severe	8	12.12	66	100.00

Anx_Lvl	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Mild	36	54.55	36	54.55
Minimal	17	25.76	53	80.30
Mod	12	18.18	65	98.48
Severe	1	1.52	66	100.00

Stress_Lvl	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Low	1	1.52	1	1.52
Mod	65	98.48	66	100.00

IV. SAS Code:

Histogram/Five Number Summary for Quantitative variables

```
DATA CIMHS;  
  INFILE '/home/u60822453/sasuser.v94/CIMHSDataFinal.csv'  
  DELIMITER=' , ' ;  
  INPUT MAJOR $  
        GENDER $  
        RACE $  
        YEAR $  
        RESIDENCE $  
        GPA  
        Days_Per_Wk  
        Cups  
        Type $  
        Size $  
        Reason $  
        Diagnosis $  
        Q1PHQ  
        Q2PHQ  
        Q3PHQ  
        Q4PHQ  
        Q5PHQ  
        Q6PHQ  
        Q7PHQ  
        Q8PHQ  
        Q9PHQ  
        Q10GAD  
        Q11GAD  
        Q12GAD  
        Q13GAD  
        Q14GAD  
        Q15GAD  
        Q16GAD  
        Q17PSS
```

```

Q18PSS
Q19PSS
Q20PSS
Q21PSS
Q22PSS
Q23PSS
Q24PSS
Q25PSS
Q26PSS
Source_stress $
Caff_Symp $
Caff_Grades $;

/* Measuring Caff_Lvl based on size of cups consumed */
IF Size EQ 'S' THEN Caff_Lvl = 180;
ELSE IF Size EQ 'M' THEN Caff_Lvl= 260;
ELSE IF Size EQ 'L' THEN Caff_Lvl= 330;
ELSE IF Size EQ 'XL' THEN Caff_Lvl= 415;
ELSE IF Size EQ 'B' THEN Caff_Lvl = 34;
/* Calculating the amount of caffeine consumed per week */
Total_Caff_Wk = Cups * Caff_Lvl * Days_Per_Wk;
RUN;

/* Printing the data in a table */
PROC PRINT DATA= CIMHS;
RUN;

/* Five Number Summary */
PROC MEANS DATA=CIMHS MEAN MEDIAN STD QP1 QP5 MAX MIN
MAXDEC=2;
VAR GPA Days_Per_Wk Cups Caff_Lvl Total_Caff_Wk;
RUN;

/* Creating Histograms for Each Quantitative Variable */
PROC UNIVARIATE DATA=CIMHS noprint;
HISTOGRAM GPA Days_Per_Wk Cups Caff_Lvl Total_Caff_Wk;
RUN;

```

Data displayed after PROC PRINT procedure:

Obs	MAJOR	GENDER	RACE	YEAR	RESIDENCE	GPA	Dtys_Fac_Wk	Coun	Type	Size	Reason	Diagnosis	Q1PHQ	Q2PHQ	Q3PHQ	Q4PHQ	Q5PHQ	Q6PHQ	Q7PHQ	Q8PHQ	Q9PHQ	Q10PHQ	Q11GAD	Q12GAD	Q13GAD	Q14GAD	Q15GAD	Q16GAD	Q17GAD	Q17PSS	Q18PSS	Q19PSS	Q20PSS	Q21PSS	Q22PSS	Q23PSS	Q24PSS	Q25PSS	Q26PSS	Source_stress	CatF_Sympt	CatF_Disorder	CatF_Lvl	Total_Cat_Wk	
1	2	M	W	4	1	3.45	5	3	1	M	7	4	3	2	3	3	4	2	2	1	1	2	2	0	1	0	1	1	2	2	3	2	2	3	2	1	2	2	1	4	Y	260	3900		
2	2	F	A	3	3	3.79	7	2	1	M	1	4	1	2	2	3	3	1	2	1	1	2	2	0	1	0	1	2	2	3	2	3	2	3	2	1	2	1	5	Y	260	3640			
3	4	M	A	4	3	3.64	7	3	1	M	7	4	1	2	4	4	3	1	2	1	1	2	2	2	3	0	1	0	2	2	4	3	3	1	3	3	0	2	1	4	Y	260	5460		
4	4	F	W	3	3	3.65	5	3	1	M	2	1	4	2	2	4	2	3	2	2	1	1	3	2	1	1	0	1	2	2	4	2	5	2	2	2	0	3	1	4	Y	260	3920		
5	4	M	A	2	2	3.80	7	1	1	L	2	4	1	1	4	2	2	1	1	1	1	1	2	2	0	1	1	0	0	1	1	2	4	3	1	3	3	0	1	1	2	N	330	2310	
6	4	F	W	2	2	3.61	7	2	1	L	5	4	1	2	4	3	3	1	2	1	1	2	1	1	1	1	0	1	0	2	2	3	3	3	2	2	2	1	2	1	4	Y	330	4620	
7	5	F	W	3	1	3.75	3	1	1	L	1	4	2	1	3	2	3	1	2	1	1	1	2	2	0	1	0	0	0	2	2	3	3	2	2	1	3	3	0	1	6	2	N	330	990
8	4	M	A	1	2	4.00	2	1	4	B	1	4	1	1	2	2	1	1	2	1	1	2	2	1	1	0	0	0	1	0	2	3	3	1	0	2	0	0	1	3	N	34	68		
9	4	M	A	4	1	3.89	7	3	3	B	3	4	1	2	4	3	3	1	2	1	1	1	2	2	1	1	0	0	0	1	1	2	3	3	1	3	3	0	1	8	2	N	34	714	
10	4	M	B	3	3	3.46	5	4	1	B	7	4	3	3	4	3	3	2	3	1	1	3	2	2	2	1	2	2	3	3	3	4	2	2	3	2	1	2	3	1	4	Y	160	3630	
11	2	F	A	3	3	3.67	7	2	1	M	5	4	1	2	3	2	3	1	2	1	1	3	4	0	0	1	1	1	2	2	0	2	2	2	2	2	2	2	1	5	Y	260	3640		
12	3	M	W	3	1	3.60	3	1	2	L	3	4	2	2	2	3	3	1	1	1	1	1	2	2	1	0	0	0	1	1	1	3	1	2	1	2	2	1	3	1	5	Y	330	890	
13	5	F	A	4	1	3.70	7	3	1	M	1	4	1	1	3	2	2	1	1	1	1	1	2	1	1	0	1	0	0	2	2	3	2	2	2	3	2	1	2	4	4	Y	260	5460	
14	4	M	W	4	3	3.90	5	2	1	M	2	1	2	2	4	4	4	2	2	1	1	2	1	0	1	1	1	0	1	0	1	1	2	1	3	1	1	3	1	1	8	4	Y	260	2600
15	1	M	W	4	1	3.30	7	2	3	B	3	1	1	2	3	2	2	3	2	1	1	3	2	1	1	1	1	1	2	3	2	4	2	3	2	2	2	2	3	1	4	Y	34	476	
16	5	F	A	2	2	3.80	5	4	1	M	7	5	2	1	3	2	2	3	2	1	1	1	3	1	0	0	1	0	2	2	3	3	3	2	1	3	2	2	3	3	4	Y	260	5200	
17	5	F	W	4	3	3.96	7	4	1	B	7	4	2	2	3	3	2	1	2	1	1	1	4	2	1	1	2	0	1	2	2	3	2	3	2	2	2	1	2	3	5	Y	160	5040	
18	5	F	W	4	3	3.90	7	4	1	B	8	5	2	2	3	3	2	1	2	1	1	1	4	2	2	1	1	2	0	1	2	2	3	2	5	3	2	3	1	3	5	Y	160	5040	
19	2	M	A	4	1	3.30	7	2	3	L	3	4	1	2	3	4	4	2	2	1	1	1	2	3	2	1	1	2	0	3	2	4	2	3	3	1	2	2	3	1	4	Y	330	4620	
20	4	M	A	3	3	3.60	5	2	1	L	1	4	1	1	4	4	3	2	2	1	1	1	3	2	2	1	0	0	1	2	3	2	2	2	2	2	2	2	3	1	4	Y	330	3300	
21	4	M	W	3	3	3.60	3	3	1	M	2	4	1	2	4	4	2	1	2	1	1	1	2	2	1	0	1	0	0	2	2	4	2	3	2	2	3	2	3	1	4	Y	260	2340	
22	4	F	B	2	2	3.50	5	2	1	M	6	4	1	1	3	3	3	1	2	1	1	1	2	1	1	0	0	0	1	1	1	3	3	2	2	2	2	2	1	4	1	5	Y	260	2600
23	2	F	A	3	3	3.84	5	3	2	M	2	4	1	2	3	3	3	1	1	1	1	1	2	2	1	1	0	1	1	1	3	4	2	2	2	1	3	3	1	2	9	3	N	260	3600
24	4	F	A	4	3	3.25	5	3	1	M	7	4	1	3	3	3	3	2	2	1	1	1	2	3	2	2	1	1	2	2	3	2	3	2	2	2	2	3	1	4	Y	260	3900		
25	4	M	W	4	1	3.40	7	3	1	M	7	4	1	2	3	3	3	3	1	2	1	1	1	2	3	2	1	0	0	1	1	2	4	2	3	2	2	2	3	1	4	Y	260	5460	
26	4	M	A	3	1	3.40	3	2	4	B	1	4	1	2	4	3	2	2	1	1	1	1	1	2	1	1	0	1	1	2	3	3	2	2	3	3	2	0	3	8	2	N	34	204	
27	2	F	A	1	2	4.00	4	2	1	M	1	4	1	1	2	2	2	1	2	1	1	1	1	1	1	1	1	0	0	1	3	2	3	2	2	2	3	2	0	1	4	Y	260	2580	
28	4	F	W	3	2	3.90	7	1	1	L	1	4	2	1	4	2	2	1	2	1	1	1	2	0	0	0	0	0	0	0	3	3	3	3	2	1	1	3	0	2	11	5	Y	330	2310
29	5	F	W	4	1	3.90	7	2	1	M	11	4	1	1	4	2	2	1	1	1	1	1	1	1	1	1	0	0	0	0	1	3	2	3	1	1	3	0	0	8	4	Y	260	3640	
30	3	F	A	4	3	3.30	5	1	1	M	7	1	2	2	3	2	2	2	2	1	1	3	2	1	2	1	1	1	1	2	1	4	1	2	2	2	0	0	1	4	Y	260	1300		
31	2	F	A	2	3	3.80	7	3	1	M	6	4	1	2	3	2	2	1	1	1	1	1	2	2	1	1	1	0	0	1	2	2	4	3	2	2	3	2	0	2	1	4	Y	260	5460
32	2	F	W	4	1	3.70	7	2	3	B	3	4	1	2	3	3	2	1	1	1	1	1	2	3	2	1	1	0	0	2	2	2	2	2	2	3	2	0	2	8	3	N	34	476	
33	2	F	A	2	2	3.70	3	1	2	L	3	4	2	2	4	2	1	1	2	1	1	1	2	1	1	1	0	0	0	1	2	3	0	2	2	3	3	0	2	1	4	Y	330	890	
34	2	M	W	1	2	4.00	1	2	3	B	3	4	1	1	1	2	2	1	2	1	1	1	1	2	1	0	1	0	0	0	0	3	4	2	2	1	1	3	0	10	3	N	34	68	
35	5	M	B	3	3	3.20	7	4	1	B	3	2	2	3	3	3	2	2	1	1	1	1	2	1	1	2	1	0	0	2	2	3	1	3	4	2	1	2	4	3	5	Y	160	5040	
36	4	M	A	4	3	3.90	2	1	3	B	3	1	2	1	1	2	3	1	1	1	1	1	2	2	1	1	2	0	1	2	2	3	2	3	2	2	2	1	2	1	2	N	34	68	
37	5	M	W	4	1	3.20	7	4	3	B	7	4	2	4	3	4	4	2	3	1	1	3	3	2	2	1	0	0	2	2	3	4	2	1	3	2	1	0	3	1	4	Y	34	952	
38	4	F	A	3	3	3.70	7	3	1	M	2	4	1	2	4	2	3	1	2	1	1	1	2	2	1	0	0	0	0	3	4	3	2	2	3	3	0	2	8	5	Y	260	9460		
39	2	M	A	1	2	3.70	3	1	2	L	11	4	1	2	1	2	1	1	1	1	1	1	2	2	1	1	0	0	1	1	0	2	3	2	1	3	3	0	2	1	2	N	330	890	
40	5	M	A	4	3	3.30	7	5	1	M	7	1	1	1	3	3	3	2	2	1	1	1	2	2	1	1	2	1	0	1	2	3	2	2	2	2	2	2	0	3	8	5	Y	260	9100
41	4	F	W	3	1	3.80	7	2	1	B	1	4	1	1	3	2	2	1	2	1	1	1	1	2	0	0	1	0	1	1	3	2	3	3	2	3	3	0	2	11	4	Y	260	2520	
42	4	M	B	3	3	3.67	7	4	1	M	2	4	2	3	4	3	2	2	1	1	2	2	1	1	1	1	1	1	1	0	2	3	2	2	2	3	2	2	2	1	4	Y	260	7380	
43	4	M	A	4	3	3.90	7	1	1	L	1	4	2	1	3	3	2	1	2	2	1	1	1	0	0	0	0	0	0	1	1														

```
VALUE $RACE  'A'= 'Asian'
              'B'= 'Black'
              'W'= 'White';

VALUE $YEAR  '1'='Freshman'
              '2'='Sophomore'
              '3'='Junior'
              '4'='Senior';

VALUE $RESIDENCE  '1'= 'Commuter'
                  '2'= 'Dorm Resident'
                  '3'= 'Nearby off campus';

VALUE $TYPE  '1'= 'Coffee'
              '2'= 'Tea'
              '3'= 'Soda'
              '4'= 'Energy Drinks'
              '5'= 'Other';

VALUE $REASON  '1'= 'Stay awake in classes'
                '2'= 'Increase concentration'
                '3'= 'For Enjoyment'
                '4'= 'Physical or athletic performance'
                '5'= 'Socializing with friends'
                '6'= 'Health'
                '7'= 'To feel less stressed about life'
                '8'= 'To feel less anxious'
                '9'= 'To warm up'
                '10'= 'To aid in digestion after a meal'
                '11'= 'Other';

VALUE $DIAGNOSIS  '1'= 'Anxiety'
                  '2'= 'Depression'
```

```

        '3'= 'Both'
        '4'= 'Undiagnosed'
        '5'= 'Other';
VALUE $SOURCE_STR '1'= 'Academic'
        '2'= 'Family'
        '3'= 'Health'
        '4'= 'Breakup'
        '5'= 'Death of family or friend'
        '6'= 'Financial'
        '7'= 'Traumatic event'
        '8'= 'Job related'
        '9'= 'Extracurricular activities'
        '10'= 'Trouble adjusting to college'
        '11'= 'Social'
        '12'= 'Other';
VALUE DEP_GAD_FREQ 0= 'Not at all'
        1= 'Several days'
        2= 'More than half the days'
        3= 'Nearly everyday';
VALUE PSS_FREQ      0= 'Never'
        1= 'Almost Never'
        2= 'Sometimes'
        3= 'Fairly often'
        4= 'Very often';
VALUE $CAFFSYMPYN  '1'= 'Strongly disagree'
        '2'= 'Disagree'
        '3'= 'Neutral'
        '4'= 'Agree'

```

```
                '5'= 'Strongly agree';
VALUE $CAFFGRADESYN 'Y'= 'Yes'
                'N'= 'No';

RUN;

DATA CIMHS;
INFILE '/home/u60822453/sasuser.v94/CIMHSDataFinal.csv'
DELIMITER=', ';
INPUT MAJOR $
      GENDER $
      RACE $
      YEAR $
      RESIDENCE $
      GPA
      DAYS_PER_WK
      CUPS
      TYPE $
      SIZE $
      REASON $
      DIAGNOSIS $
      Q1PHQ
      Q2PHQ
      Q3PHQ
      Q4PHQ
      Q5PHQ
      Q6PHQ
      Q7PHQ
      Q8PHQ
      Q9PHQ
```

```

Q10GAD
Q11GAD
Q12GAD
Q13GAD
Q14GAD
Q15GAD
Q16GAD
Q17PSS
Q18PSS
Q19PSS
Q20PSS
Q21PSS
Q22PSS
Q23PSS
Q24PSS
Q25PSS
Q26PSS
Source_stress $
Caff_Symp $
Caff_Grades $;

/*Calculating PHQ9 Score, GAD7 Score, PSS Score */
PHQ9Sc= (Q1PHQ)+ (Q2PHQ) + (Q3PHQ) + (Q4PHQ) + (Q5PHQ)+
(Q6PHQ) + (Q7PHQ) + (Q8PHQ) + (Q9PHQ);
GAD7Sc= (Q10GAD) + (Q11GAD) + (Q12GAD) + (Q13GAD) + (Q14GAD) +
(Q15GAD) + (Q16GAD);
PSSSc= (Q17PSS) + (Q18PSS) + (Q19PSS) + (Q20PSS) + (Q21PSS) +
(Q22PSS) + (Q23PSS) + (Q24PSS) + (Q25PSS) + (Q26PSS);
/* IF ELSE IF statements for PHQ9 Score */

```

```
IF PHQ9Sc GE 0 AND PHQ9Sc LE 4 THEN Depr_Lvl ="Minimal";
ELSE IF PHQ9Sc GE 5 AND PHQ9Sc LE 9 THEN Depr_Lvl = "Mild";
ELSE IF PHQ9Sc GE 10 AND PHQ9Sc LE 14 THEN Depr_Lvl = "Mod" ;
ELSE IF PHQ9Sc GE 15 AND PHQ9Sc LE 19 THEN Depr_Lvl = "Mod
Severe";
```

```
ELSE IF PHQ9Sc GE 20 THEN Depr_Lvl = "Severe";
/* IF ELSE IF statements for GAD7 Score */
IF GAD7Sc GE 0 AND GAD7Sc LE 4 THEN Anx_Lvl= "Minimal";
ELSE IF GAD7Sc GE 5 AND GAD7Sc LE 9 THEN Anx_Lvl= "Mild";
ELSE IF GAD7Sc GE 10 AND GAD7Sc LE 14 THEN Anx_Lvl= "Mod";
ELSE IF GAD7Sc GE 15 THEN Anx_Lvl= "Severe";
/* IF THEN ELSE IF statements for PSS Score */
IF PSSSc GE 0 AND PSSSc LE 13 THEN Stress_Lvl="Low";
ELSE IF PSSSc GE 14 AND PSSSc LE 26 THEN Stress_Lvl="Mod";
ELSE IF PSSSc GE 27 THEN Stress_Lvl="High";
```

```
FORMAT MAJOR $MAJOR.
      GENDER $GENDER.
      RACE $RACE.
      YEAR $YEAR.
      RESIDENCE $RESIDENCE.
      TYPE $TYPE.
      REASON $REASON.
      DIAGNOSIS $DIAGNOSIS.
      Q1PHQ DEP_GAD_FREQ.
      Q2PHQ DEP_GAD_FREQ.
      Q3PHQ DEP_GAD_FREQ.
      Q4PHQ DEP_GAD_FREQ.
      Q5PHQ DEP_GAD_FREQ.
```



```

    Q6PHQ DEP_GAD_FREQ.
    Q7PHQ DEP_GAD_FREQ.
    Q8PHQ DEP_GAD_FREQ.
    Q9PHQ DEP_GAD_FREQ.
    Q10GAD DEP_GAD_FREQ.
    Q11GAD DEP_GAD_FREQ.
    Q12GAD DEP_GAD_FREQ.
    Q13GAD DEP_GAD_FREQ.
    Q14GAD DEP_GAD_FREQ.
    Q15GAD DEP_GAD_FREQ.
    Q16GAD DEP_GAD_FREQ.
    Q17PSS PSS_FREQ.
    Q18PSS PSS_FREQ.
    Q19PSS PSS_FREQ.
    Q20PSS PSS_FREQ.
    Q21PSS PSS_FREQ.
    Q22PSS PSS_FREQ.
    Q23PSS PSS_FREQ.
    Q24PSS PSS_FREQ.
    Q25PSS PSS_FREQ.
    Q26PSS PSS_FREQ.
    Source_stress $SOURCE_STR.
    Caff_Symp $CAFFSYMPYN.
    Caff_Grades $CAFFGRADESYN.;

RUN;

/* Generate PROC FREQ for each categorical variable */
PROC FREQ DATA= CIMHS;
TABLES MAJOR GENDER RACE YEAR RESIDENCE TYPE REASON DIAGNOSIS
Source_stress Caff_Symp Caff_Grades Depr_Lvl Anx_Lvl Stress_Lvl;
RUN;

```