



2020

[STRESS: THE SILENT KILLER]

[PRESENTED BY STUDENTS OF ENCEPHAL]

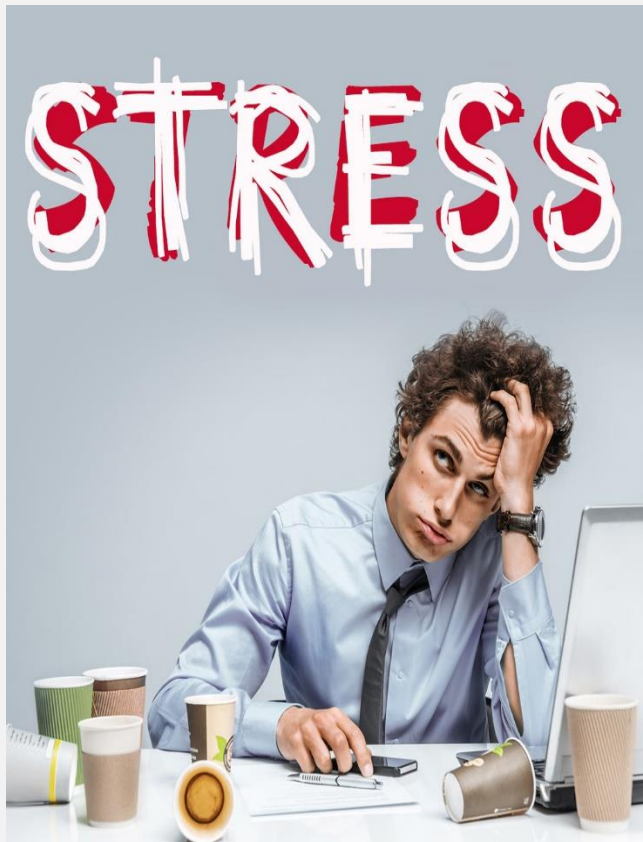
RANIT CHATTERJEE

AKHIL GUPTA

[RAMANUJAN COLLEGE | [KALKAJI, NEW DELHI]

Preface

*This project has been taken up for the in the context of world's one of the renowned problems that exists in the human society, that is **STRESS**, a psychological state of human body that makes a restless leading to mental irritation for its surrounding, not able to focus and causing disturbance in day to day life. Our aim is to study on the same in possible and reachable area of India (Delhi – NCR), and make a report on same, by applying all the statistical methods, which our under our knowledge.*



Acknowledgement

We would like to thank our Principal and College to provide the basic facilities.

*We'd like to thank Dr. Sachin Tomar sir for the approval of our project.
We also thank our teachers to support us during the project.*

We'd like to thank our family and friends for their support.

Special thanks to Ravi sir (from LSR college) who always readily helped us and provide guidance during the project analysis.

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Introduction

The present-day society is an ever-expanding hub of technology, education, urbanisation and occupation, where we flourish on performance, competition and perfection. Each one of us, no matter the age or background, gets so indulged in one's respective walk of life that we end up ignoring the menace that is gradually turning into one of the biggest by-products of our relentless pursuits - stress.

Stress causes damage that is often underestimated, and it is a social phenomenon that should be closely examined and evaluated. We either fail to determine its intensity or keep neglecting it to the extent that consequently, our mental health goes for a toss. The individual ends up agitated, overwhelmed or even depressed. It catches people belonging to all social groups and ages in its shackles and is weaved in every pattern of our community, making it unavoidable; even inside the safe walls of an educational institute. Hence, we took a keen interest in bringing the project **STRESS – The Silent Killer** to life.

Now, Statistics has always played a critical role in opening one's eyes to even the most alarming realities and convincing them to take steps to make the requisite changes. Its essence lies in practical application and contributing to the real world. This can be made possible only by connecting directly to the masses through surveys, and extracting the most pertinent information.

As students of Statistics, various mathematical tools are within our reach to make this possible; and it would not be wrong to mention that the results were alarming. And so, **ENCEPHAL** - the Statistics Society of Ramanujan College has engaged in the effort to analyze the stress levels and its impact on our society in the hope to be a part of a healthier, happier and a more competent community.

What is Stress and Anxiety?

Most people experience stress and anxiety from time to time. Stress is any demand placed on your brain or physical body. People can report feeling stressed when multiple competing demands are placed on them. The feeling of being stressed can be triggered by an event that makes you feel frustrated or nervous. Anxiety is a feeling of fear, worry, or unease. It can be a reaction to stress, or it can occur in people who are unable to identify significant stressors in their life.

Stress and anxiety are not always bad. In the short term, they can help you overcome a challenge or dangerous situation. Examples of everyday stress and anxiety include worrying about finding a job, feeling nervous before a big test, or being embarrassed in certain social situations. If we did not experience some anxiety, we might not be motivated to do things that we need to do (for instance, studying for that big test!).

However, if stress and anxiety begin interfering with your daily life, it may indicate a more serious issue. If you are avoiding situations due to irrational fears, constantly worrying, or experiencing severe anxiety about a traumatic event week after it happened, it may be time to seek help.

Cause and Effect?

Stress is actually a normal part of life. At times, it serves a useful purpose. Stress can motivate you to get that promotion at work, or run the last mile of a marathon. But if you don't get a handle on your stress and it becomes long-term, it can seriously interfere with your job, family life, and health. More than half of Indians say they fight with friends and loved ones because of stress, and more than 70% say they experience real physical and emotional symptoms from it.

Common stressors include:

- moving
- starting a new school or job
- having an illness or injury
- having a friend or family member who is ill or injured
- death of a family member or friend
- getting married
- having a baby
- Drugs and medications
- Drugs that contain stimulants may make the symptoms of stress and anxiety worse. Regular use of caffeine, illicit drugs such as cocaine, and even alcohol can also make symptoms worse.

Prescription medications that can make symptoms worse include:

- thyroid medications
- asthma inhalers
- diet pills

Stress- and anxiety-related disorders

Stress and anxiety that occur frequently or seem out of proportion to the stressor may be signs of an anxiety disorder. An estimated 40 million Indians live with some type of anxiety disorder. People with these disorders may feel anxious and stressed on a daily basis and for prolonged periods of time. These disorders include the following:

- Generalized anxiety disorder (GAD) is a common anxiety disorder characterized by uncontrollable worrying. Sometimes people worry about bad things happening to them or their loved ones, and at other times they may not be able to identify any source of worry.
- Panic disorder is a condition that causes panic attacks, which are moments of extreme fear accompanied by a pounding heart, shortness of breath, and a fear of impending doom.
- Post-traumatic stress disorder (PTSD) is a condition that causes flashbacks or anxiety as the result of a traumatic experience.
- Social phobia is a condition that causes intense feelings of anxiety in situations that involve interacting with others.
- Obsessive-compulsive disorder is a condition that causes repetitive thoughts and the compulsion to complete certain ritual actions.

About The Project

Aim:

Our motive is to track the level of stress and mental health problems, to check how problematic issue it might be.

Following are our motives and target of our project:

- To measure the stress level of different age groups.
- Are stress level similar in different job backgrounds.
- To check, is there a significant increment in stress level?
- Find the factors which are significantly affecting the mental and physical health.
- A comparative study on Anxiety, in different age groups.
- How Stress and Anxiety go hand in hands.

Area of Study:

We covered **Delhi NCR** region with **1400+ responds** from different individuals.

In order to cover every type of people we targeted:

- **Crowded Markets** like Nehru Place, Connaught Place and Chandni chowk.
- **Residence Area** like Greater Kailash, Gurgaon and Saket.
- **Slum Areas** in Kirti Nagar and Govindpuri.

The aim will be to get at least 100 responds from each area in order to get efficient results.

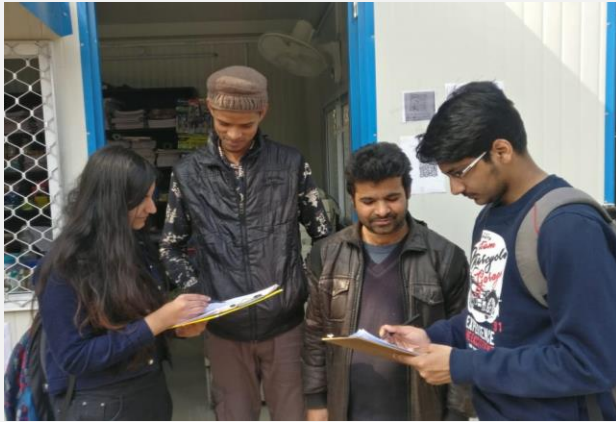
Methodology:

1. To conduct the project, we prepared a questionnaire, depending on our aim. To get an effective data, we cover a significant sample population of different age groups using post-stratified sampling technique, of each Age-Group consisting at least 70 individuals, which in total comprises around 600 individuals.
2. **The Survey timeline was 16th Sept 2019 - 6th March 2020**
3. Each response will be measured under the ordinal scale, which will be further analyzed using psychological tools for measuring mental state.
4. For Measurement of stress, **Perceived Stress Scale (PSS)** will be used.
5. For Measurement of anxiety, **Hamilton Anxiety Rating Scale (HAM-A)** will be used.
6. For, statistical study, the following tools will be used as described below-

Statistical Tools Used:

- Sampling techniques, to categorize the data w.r.t different age groups.
- Trend line and ANOVA (&/or ANCOVA), to check by how much it has increased or it has been persistent.
- Copulas will be used to compare Stress and Anxiety.
- Regression models, to find factors affecting significantly.
- Various charts to visualize our data.

Some Captured Moments:



Questionnaire

The questionnaire is based upon the common scale “PSS: Perceived Stress Scale”, used to measure stress and anxiety, which eventually helps us to quantify the data, that is to convert it into numeric terms. The questions 15-19 helps us recognize the cause and effect of stress and anxiety.

Following is our questionnaire:

AGE: _____

GENDER: ☐ Male ☐ Female

OCCUPATION:

- ☐ Student
- ☐ Teacher
- ☐ Private Job
- ☐ Government Job
- ☐ Self employed
- ☐ Unemployed
- ☐ Retired

1) How often have you been upset because of something that happened unexpectedly?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

2) How often have you felt that you were unable to control the important things in your life?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

3) How often have you felt nervous and “stressed”?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

4) How often have you felt confident about your ability to handle your personal problems?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

5) How often have you felt that things were going your way?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

6) How often have you found that you could not cope with all the things that you had to do?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

7) How often have you been able to control irritations in your life?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

8) How often have you felt that you were on top of things?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

9) How often have you been angered because of things that were outside of your control?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

10) How often have you felt difficulties were pulling up so high that you could not overcome them? *

i) never ii) almost never iii) sometimes iv) fairly often v) very often

11) How often do you feel like you're lonely?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

12) How often do you find it difficult to sleep?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

13) How often do you find it difficult to concentrate on your work?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

14) How often do you feel anxious while talking to someone?

i) never ii) almost never iii) sometimes iv) fairly often v) very often

15) What are the Symptoms you experience due to stress?

- ☐ Frequent Headaches
- ☐ Depression
- ☐ Anxiety Attacks
- ☐ Insomnia (Sleeping Problems)
- ☐ Loss of Appetite (Reduced Desire to eat)
- ☐ Uncontrollable Anger and Irritation
- ☐ Mood Swings
- ☐ Other: _____

16) What are the major causes for your Stress?

- ☐ Financial Problems
- ☐ Family Responsibilities
- ☐ Health Concerns
- ☐ Work/Study load
- ☐ Emotional Reasons
- ☐ My daily routine is Repetitive and Monotonous.
- ☐ I don't have enough time for myself.
- ☐ Other: _____

17) What measures have you taken to control your stress level?

- ☐ Consulted to a Doctor.
- ☐ Taking Medicines
- ☐ Meditation
- ☐ Exercise
- ☐ Eat Well
- ☐ Share your problems with other person
- ☐ Take a Break
- ☐ Other: _____

18) How much your Stress and Anxiety affects your Relationship? (Rate on scale of 10)

0 1 2 3 4 5 6 7 8 9 10

19) How much you are satisfied with your Lifestyle? (Rate on scale of 10)

0 1 2 3 4 5 6 7 8 9 10

Descriptives

This section is a summary statistic that summarises the features from a collection of information of 1400+ people surveyed for our research. It is focused upon describing, summarising and organizing the data so to understand the essentials of our research work.

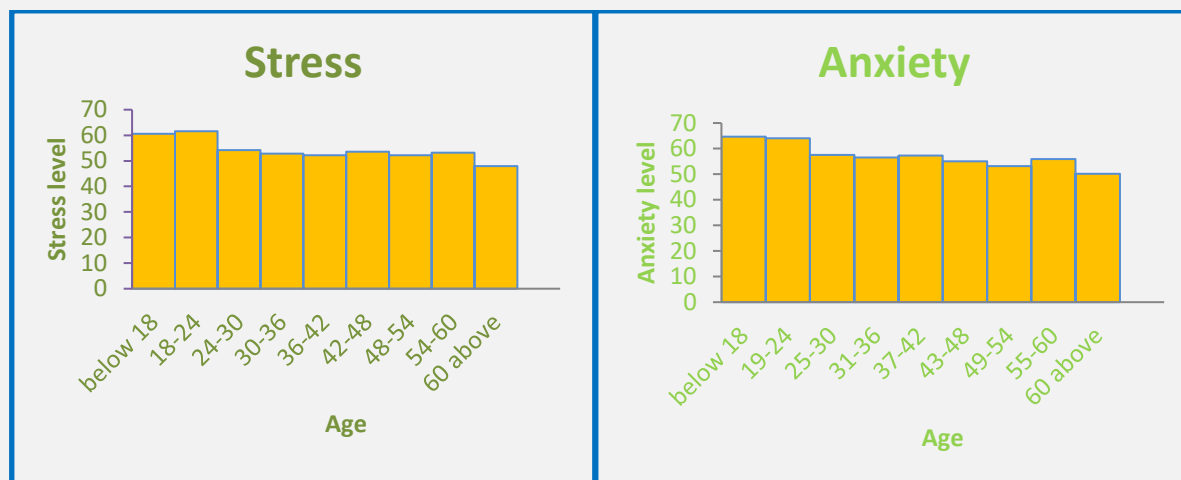
UNDER THIS, THE FOLLOWING QUESTIONS ARE SOUGHT TO BE ANSWERED:

1. Where is the approximate middle, or center, of the graph?
2. How spread out are the data values on the graph?
3. What is the overall shape of the graph?
4. Does it have any interesting pattern?



FOR THE SAME, CHARTS ARE MADE AS GRAPHICAL DISPLAYS ALONG WITH THE QUANTITATIVE MEASURES TO ENABLE THE CLARITY OF INFORMATION.

STRESS AND ANXIETY LEVEL AMONG VARIOUS AGE GROUPS

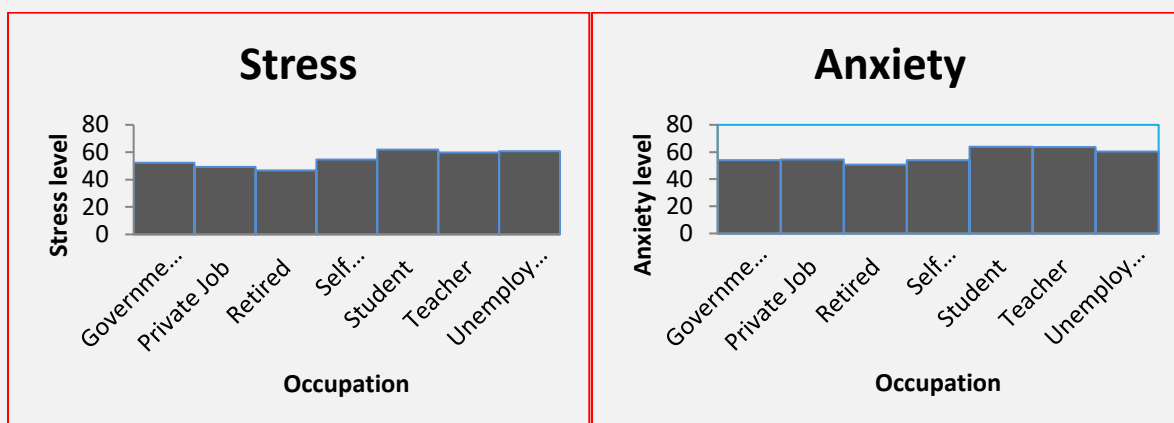


Upon interpreting the data, we found that average stress level was maximum for age group of 18-24 averaging at “61.622”. We also found out that stress was least experienced by people above the age of 60 averaging at “47.993”. This can be because people often retire at age 60 and often are much less stressed. While maximum stress is experienced by age group of 18 to 24 because it’s the time to build one’s career and that can be stressful. We also found that stress level keeps on decreasing as we grow old.

In case of anxiety, the result was a bit different. Here we found that maximum anxiety was experienced by teenagers i.e. below 18 group. Their average anxiety was found to be “64.670”. The average anxiety level was least for above 60 group averaging at “50.102”. The average also keeps on decreasing with age along with a few exceptions.

Also, Stress & Anxiety are seen relatively higher among people aged 24 below i.e. our youth.

STRESS AND ANXIETY LEVEL AMONG VARIOUS OCCUPATION

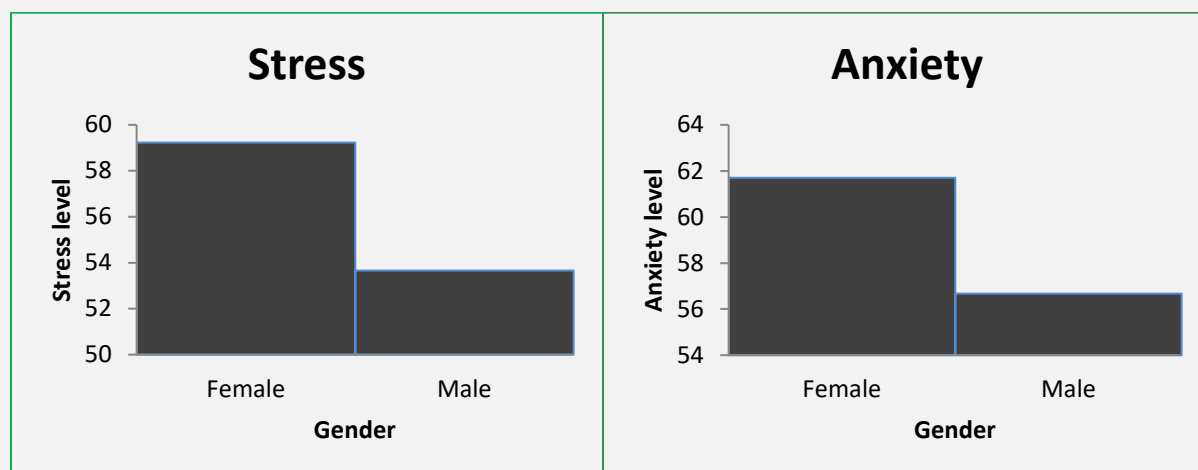


What we observe from the graphs of stress and anxiety of different occupation, it is quite clear that the average stress and average anxiety is highest among students (61.82 and 63.84 respectively), followed by teachers (59.88 & 63.75 respectively) and unemployed (60.75 & 60.38 respectively).

It's not a surprising fact that in the recent times the peer pressure to score good grades in academics have raised, making students more vulnerable to being stress and face anxiety. Teachers also face the responsibility to teach properly, provide better guidance, get more and more knowledge and prepare for their lectures leaving them vulnerable to be stressed and anxiety.

The unemployed ones also meet quite similar fate like that of students and teachers, as looking for job and not being able to support family is quite stressful!! The lowest of all has been retired one with only “46.85” and “50.77” respectively.

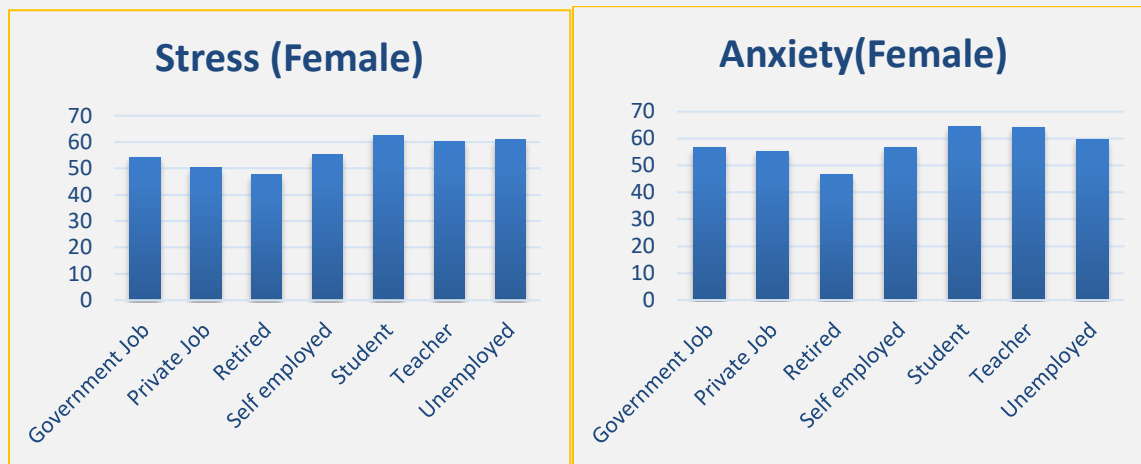
STRESS AND ANXIETY LEVEL AMONG MALES & FEMALES



When we compared average stress among the surveyed males and females, we found that women experienced much more stress in comparison to male counterpart. While female's average stress level was found to be “59.227”, males had an average stress level of “53.665”. This can be because of various reasons. A basic notion that females take any task in much more serious manner than male counterpart could result in more stress.

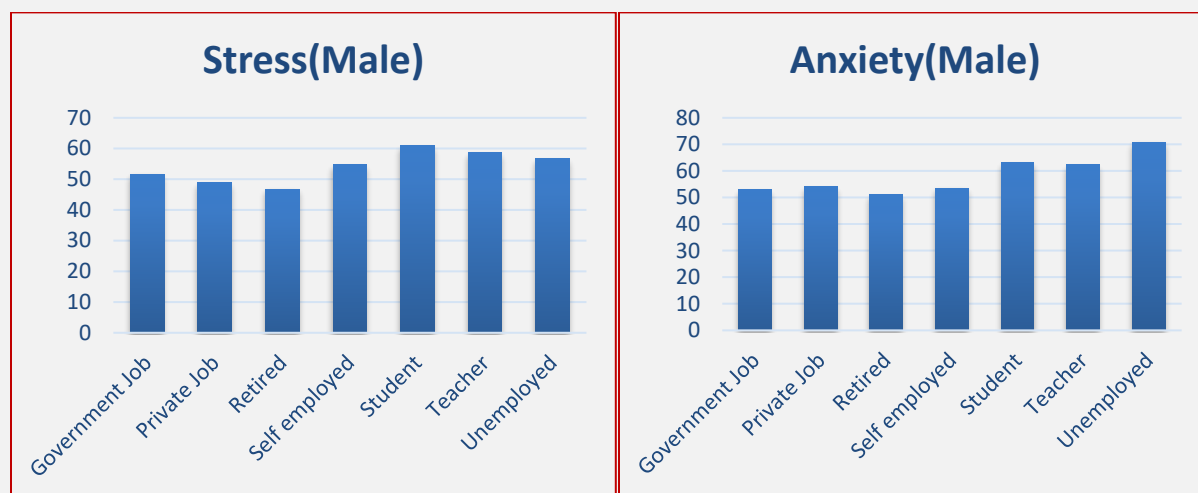
There can be more underlying reason for females experiencing more stress. When we looked at average anxiety level among both gender it was the similar to the case of stress, with females experiencing more anxiety than male. In case of females the average anxiety level was “61.707” and for male it was “56.677”.

STRESS AND ANXIETY LEVEL AMONG FEMALES ENGAGED IN DIFFERENT OCCUPATIONS



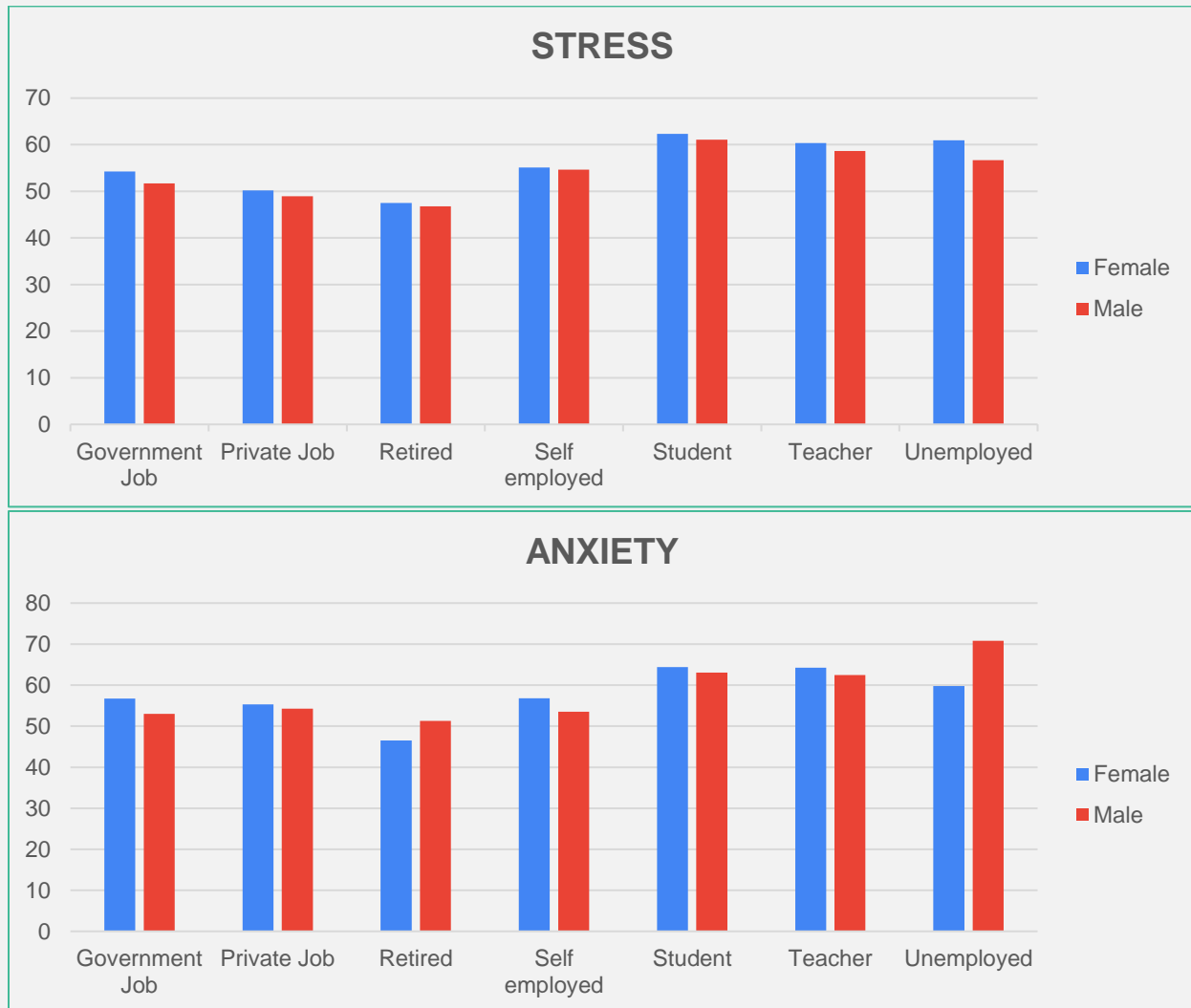
When we looked at average stress level among females based on their occupation, we found that maximum stress was experienced by female students averaging at “62.341” and least was experienced by retired females averaging at “47.5”.The reason can be same as the above case i.e. retired person tends to be less stressed and a student tends to be more stressed because it is one of the most critical time in their career and it can lead to them experiencing stress. Same was the case in anxiety, with the maximum anxiety experienced by female students and least by retired females.

STRESS AND ANXIETY LEVEL AMONG MALES ENGAGED IN DIFFERENT OCCUPATIONS



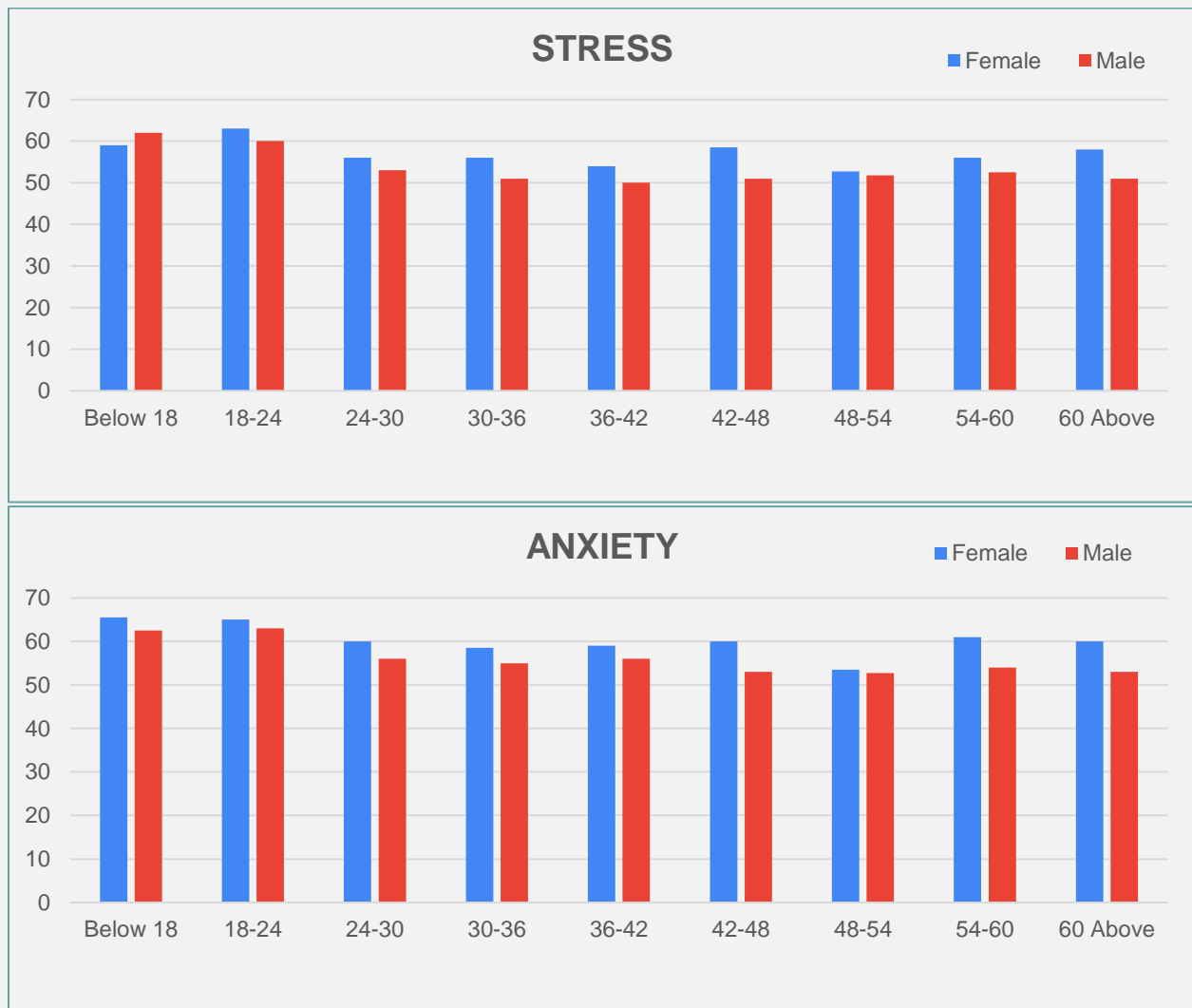
In case of males, sample when arranged on basis of their occupation, maximum stress was experienced by male students and least by retired individual. While male students stress level averaged at “61.103”, retired was found to be “46.770”. Anxiety experienced was maximum by unemployed male averaging at “70.833” and least by retired males averaging at “51.302”. This could be because males are expected to bring money and have a job to sustain their family and not having a job could result in more anxiety level.

COMPARISON BETWEEN STRESS AND ANXIETY LEVELS OF MALES & FEMALES ENGAGED IN DIFFERENT OCCUPATIONS



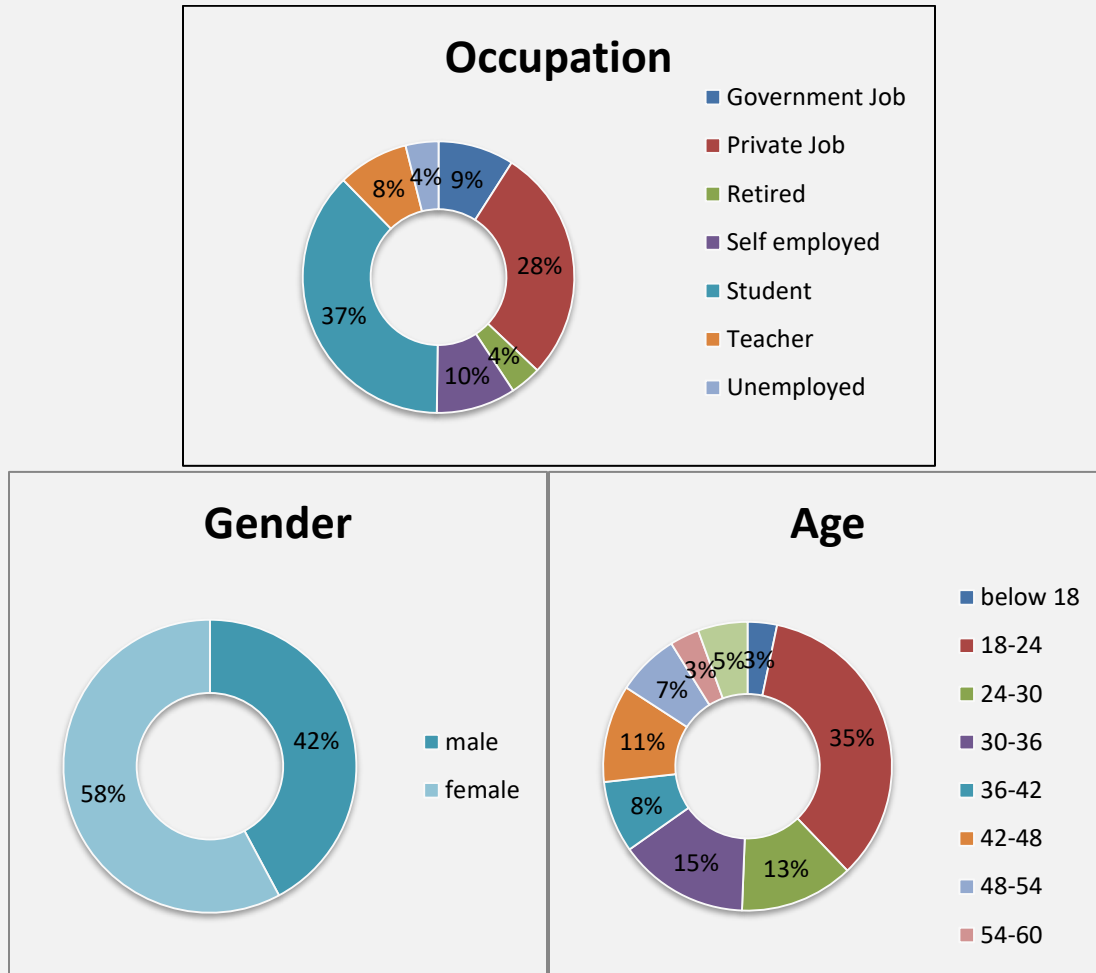
We further compared stress and anxiety level among males and females according to their occupation. In case of stress, females were more stressed in most of the cases when compared to males with same occupation as them. Seeing the statistics for anxiety, it was inferred that females experienced more anxiety in most of the cases except in the case of unemployed and retired. In these two cases males experienced more anxiety than females.

COMPARISON OF STRESS AND ANXIETY LEVEL BETWEEN MALES AND FEMALES IN VARIOUS AGE GROUPS



When we compared average stress and anxiety level among males and females based on age group, we got the same result as previous case. Females experienced more average stress level in comparison to male belonging to same age group in almost all the cases except for the ones below 18 age group. Here, males experienced more stress in comparison to female counterpart. While analysing the anxiety level, we found that in all the cases females felt more anxiety than males belonging to same age group

SURVEY POPULATION



THE ABOVE CHARTS ARE THE GRAPHICAL PRESENTATION OF THE PROPORTION OF PEOPLE SURVEYED UNDER VARIOUS CATEGORIES.

STUDENTS ACCOUNT FOR A TOTAL OF 37% OF OUR SAMPLE POPULATION, BEING THE HIGHEST IN OCCUPATION CATEGORY WHEREAS RETIRED AND UNEMPLOYED ACCOUNTS FOR 4% EACH, BEING THE LEAST SURVEYED.

42% FEMALES AND 58% MALES CONSTITUTE OUR TOTAL POPULATION.

MAJORITY OF THE PEOPLE SURVEYED BELONG TO AGE GROUP 18-24.

Analysis of Variance

We've observed that mean of every occupational structure differ from each other, students having the highest stress with an average of 61.82 and retired having only 46.85! But the next question arises that do they really differ from each other significantly? Or is it just our hypothesis that we assume it to be significant?! To answer this question, we go for the ANOVA testing of the means. For this we consider 3 cases which we take under our observation:

- I) Do all the averages under different treatment differ significantly?
- II) Does the average stress of working population differ significantly?
- III) Does the average stress of employed population differ significantly?

Following are our required results for ANOVA:

Case 1:

Ho: No significant stress level among different occupation						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Govt	132	6922.5	52.44318	130.1971		
Private	408	20080	49.21569	102.6082		
Self	137	7507.5	54.79927	147.9833		
Teacher	123	7365	59.87805	192.0957		
Unemployed	57	3462.5	60.74561	220.5279		
Retired	54	2530	46.85185	225.2795		
Sudent	546	33752.5	61.81777	158.4901		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	46778.72	6	7796.454	53.06318	2.74E-59	2.104824
Within Groups	213045.2	1450	146.9278			
Total	259824	1456				

On observing we clearly see that p-value to be very small, that is $p\text{-value} \ll 0.05$, so it's safe to say that we've enough evidence to reject our H_0 .

Hence, there is significant difference in level of stress among different occupation.

Case 2:

Ho: No significant difference between stress level between working population						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Govt	132	6922.5	52.44318	130.1971		
Private	408	20080	49.21569	102.6082		
Self	137	7507.5	54.79927	147.9833		
Teacher	123	7365	59.87805	192.0957		
Unemployed	57	3462.5	60.74561	220.5279		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	15557.81	4	3889.452	28.88401	1.54E-22	2.382381
Within Groups	114728.3	852	134.6576			
Total	130286.1	856				

Again, it's clear that P-value is again very small under 5% L.O.S., that is, $P\text{-value} < 0.05$, so it's safe to say that the level of stress for different working population differ significantly.

But on the other hand, do the average stress level differ when checked on the perspective of age groups?

SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
24-30	186	10077.5	54.18011	157.2633		
30-36	213	11242.5	52.78169	152.3967		
36-42	161	8517.5	52.90373	141.6329		
42-48	158	8492.5	53.75	153.2444		
48-54	98	5140	52.44898	128.8633		
54-60	57	2977.5	52.23684	154.3938		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	386.0073	5	77.20146	0.517789	0.762952	2.224429
Within Groups	129268.2	867	149.0983			
Total	129654.3	872				

We can see that when checked through age group perspective, they don't significantly, that is the average stress level don't differ significantly when checked on age group basis!

Case 3:

Ho: No significant difference in stress between employed population						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Govt	132	6922.5	52.44318	130.1971		
Private	408	20080	49.21569	102.6082		
Self	137	7507.5	54.79927	147.9833		
Teacher	123	7365	59.87805	192.0957		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	11801.72	3	3933.908	30.58634	1.02E-18	2.616089
Within Groups	102378.7	796	128.6165			
Total	114180.5	799				

Again, since the P-value is very small at 5% L.O.S., that is, $P\text{-value} \ll 0.05$, thus we've enough evidence to claim that the average stress level among different employed treatments differ significantly

Again, in anxiety, our objective after calculation of descriptive statistics, our aim resides in the similar cases to that of stress, that are:

- I) Do all the averages under different treatment differ significantly?
- II) Does the average anxiety of working population differ significantly?
- III) Does the average anxiety of employed population differ significantly?

Case 1:

Ho: No significant anxiety level among different occupation						
SUMMARY						
Groups	Count	Sum	Average	Variance		
Govt	132	7141.667	54.10354	232.1843		
Private	408	22237.5	54.50368	234.5384		
Self	138	7466.667	54.10628	233.9278		
Teacher	123	7841.667	63.75339	274.9132		
Unemployed	57	3441.667	60.38012	253.0523		
Retired	53	2725	51.41509	279.7432		
Sudent	546	34858.33	63.8431	239.337		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	33418.7	6	5569.783	23.03421	4.44E-26	2.104824
Within Groups	350617	1450	241.8049			
Total	384035.7	1456				

On observing we clearly see that p-value to be very small, that is $p\text{-value} \ll 0.05$, so it's safe to say that we've enough evidence to reject H_0 .

Hence, there is significant difference in level of stress among different occupation.

Case 2:

Ho: No significant difference between anxiety level between working population						
SUMMARY						
Groups	Count	Sum	Average	Variance		
Govt	132	7141.667	54.10354	232.1843		
Private	408	22237.5	54.50368	234.5384		
Self	138	7466.667	54.10628	233.9278		
Teacher	123	7841.667	63.75339	274.9132		
Unemployed	57	3441.667	60.38012	253.0523		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	10363.18	4	2590.796	10.74712	1.68E-08	2.382368
Within Groups	205631.7	853	241.0688			
Total	215994.9	857				

Again, it's clear that P-value is again very small under 5% L.O.S., that is, $P\text{-value} < 0.05$, so it's safe to say that the level anxiety for different working population differ significantly.

But on the other hand, do the average anxiety level differ when checked on the perspective of age groups?

Between Age Groups						
Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
24-30	105	6437.5	61.30952	127.442		
30-36	34	2033.333	59.80392	173.4873		
36-42	45	2870.833	63.7963	80.35213		
42-48	52	3037.5	58.41346	98.37308		
48-54	39	2270.833	58.2265	109.1805		
54-60	25	1537.5	61.5	175.463		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	1022.52	5	204.504	1.675163	0.140425	2.244703
Within Groups	35891.54	294	122.0801			
Total	36914.06	299				

We can see that when checked through age group perspective, they don't significantly, that is the average anxiety level don't differ significantly when checked on age group basis!

Case 3:

Ho: No significant difference in Anxiety between working population						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Govt	132	7141.667	54.10354	232.1843		
Private	408	22237.5	54.50368	234.5384		
Self	138	7466.667	54.10628	233.9278		
Teacher	123	7841.667	63.75339	274.9132		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	9241.847	3	3080.616	12.82378	3.44E-08	2.616075
Within Groups	191460.8	797	240.2268			
Total	200702.6	800				

Again, since the P-value is very small at 5% L.O.S., that is, $P\text{-value} < 0.05$, thus we've enough evidence to claim that the average level of anxiety among different employed treatments differ significantly.

Contingency Table

Contingency tables are used mainly when the data have more categorical values so as to find a relationship between those variables. A chi square test can be conducted on contingency tables to test whether or not a relationship exists between variables. Our data was categorized according to age groups, gender and occupation. We tried finding out if there exists an association between age groups and gender, gender and occupation, occupation and age groups on the basis of no. of people stressed and anxious.

Null Hypothesis(H_0)

There is an independence between the categories taken at a time pairwise.

On the basis of number of people stressed and on the basis of no. of people anxious:

1. H_0 : There is no association between gender and occupations

2. H_0 : There is no association between gender and age groups

3. H_0 : There is no association between occupation and age groups

Chi square tests are one sided test. So, we checked at 5%upper level, the value of our test statistic. We rejected the null hypothesis if the value of test statistic was above the value at 5% level. We could also look at the probability value, if probability value is less than 5%, then the null hypothesis is rejected.

p-value in each case:

On the basis of no. of people stressed:

- gender and occupation- $p\text{-value} < 2.2e-16$
- gender and age groups- $p\text{-value} < 6.186e-11$
- occupation and age groups- $p\text{-value} < 2.2e-16$

On the basis of no. of people anxious

- gender and occupation- $p\text{-value} < 2.2e-16$
- gender and age groups- $p\text{-value} < 2.465058e-05$
- occupation and age groups- $p\text{-value} < 2.475774e-07$

In all the 6 parts of contingency table test, the value of our test statistic was greater than the value at 5% upper level. In terms of probability value, the result can be stated as probability value was less than 5% in all the six cases. So, we had insufficient evidence to reject H_0 .

In easy words, there exists no association amongst all the categories taken pairwise on the basis of the sample of 1400+ people across the capital city considering stress and anxiety.

Student's t-test

Though we have carried out tests to compare the mean differences, in mentioned categories in group, we are now interested to carry out test to determine whether the mean stress or anxiety differ between two categories where our H_0 is Rejected.

THE SIGNIFICANT DIFFERENCE BETWEEN THE STRESS LEVELS OF MALE AND FEMALE INDIVIDUALS

Null Hypothesis: There is no significant difference between the stress levels of males and females (at 5% level of significance)

	<i>Female</i>	<i>Male</i>
Mean	59.23	53.67
Variance	180.80	163.82
Observations	615.00	843.00
Pooled Variance	170.98	
Hypothesized Mean Difference	0.00	
df	1456.00	
t Stat	8.02	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Since, the value of the calculated $|t|$ statistic (=8.02) is greater than the tabulated value of t (=1.96) and p -value (=0.00) for two tailed t test is less than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of males and females.

THE SIGNIFICANT DIFFERENCE BETWEEN THE STRESS LEVELS OF INDIVIDUALS BELONGING TO VARIOUS OCCUPATIONS

1. Between Government Job and Private Job

	<i>Government</i>	<i>Private</i>
Mean	52.63	49.18
Variance	126.38	102.43
Observations	131.00	407.00
Pooled Variance	108.23	
Hypothesized Mean Difference	0.00	
df	536.00	
t Stat	3.30	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of Government Employees and people working in private companies

Since, the value of the calculated |t| statistic (=3.30) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is less than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of government employees and people working in private companies.

2. Between Government Job and Retired People

	<i>Government</i>	<i>Retired</i>
Mean	52.44	46.85
Variance	130.20	225.28
Observations	132.00	54.00
Pooled Variance	157.58	
Hypothesized Mean Difference	0.00	
df	184.00	
t Stat	2.76	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.01	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of Government Employees and retired people

Since, the value of the calculated |t| statistic (=2.76) is greater than the tabulated value of t (=1.97) and p-value (=0.01) for two tailed t test is less than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of government employees and retired people.

3. Between Government Job and Self-employed

	<i>Government</i>	<i>Self-employed</i>
Mean	52.44	54.73
Variance	130.20	147.60
Observations	132.00	138.00
Pooled Variance	139.09	
Hypothesized Mean Difference	0.00	
df	268.00	
t Stat	-1.59	
P(T<=t) one-tail	0.06	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.11	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of Government Employees and Self-employed people

Since, the value of the calculated |t| statistic (=1.59) is less than the tabulated value of t (=1.97) and p-value (=0.11) for two tailed t test is greater than the level of significance (=0.05), we **accept the null hypothesis**.

There is no significant difference between the stress levels of government employees and self-employed people.

4. Between Government Job and Students

	<i>Government</i>	<i>Students</i>
Mean	52.44	61.82
Variance	130.20	158.49
Observations	132.00	546.00
Pooled Variance	153.01	
Hypothesized Mean Difference	0.00	
df	676.00	
t Stat	-7.81	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of Government Employees and students

Since, the value of the calculated |t| statistic (=7.81) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of government employees and students.

5. Between Government Job and Teachers

	<i>Government</i>	<i>Teachers</i>
Mean	52.44	59.88
Variance	130.20	192.10
Observations	132.00	123.00
Pooled Variance	160.05	
Hypothesized Mean Difference	0.00	
df	253.00	
t Stat	-4.69	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of Government Employees and Teachers

Since, the value of the calculated |t| statistic (=4.69) is greater than the tabulated value of t (=1.97) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of government employees and teachers.

6. Between Government Job and Unemployed People

	<i>Government</i>	<i>Unemployed</i>
Mean	52.44	60.75
Variance	130.20	220.53
Observations	132.00	57.00
Pooled Variance	157.25	
Hypothesized Mean Difference	0.00	
df	187.00	
t Stat	-4.18	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of Government Employees and unemployed people

Since, the value of the calculated |t| statistic (=4.18) is greater than the tabulated value of t (=1.97) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of government employees and unemployed people.

7. Between Private Job and Retired People

	<i>Private</i>	<i>Retired</i>
Mean	49.22	46.85
Variance	102.61	225.28
Observations	408.00	54.00
Pooled Variance	116.74	
Hypothesized Mean Difference	0.00	
df	460.00	
t Stat	1.51	
P(T<=t) one-tail	0.07	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.13	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of people working in private companies and retired people

Since, the value of the calculated $|t|$ statistic (=1.51) is less than the tabulated value of t (=1.97) and p -value (=0.13) for two tailed t test is greater than the level of significance (=0.05), we **accept the null hypothesis**.

There is no significant difference between the stress levels of retired people and people working in private companies.

8. Between Private Job and Self-employed People

	<i>Private</i>	<i>Self-employed</i>
Mean	49.22	54.73
Variance	102.61	147.60
Observations	408.00	138.00
Pooled Variance	113.94	
Hypothesized Mean Difference	0.00	
df	544.00	
t Stat	-5.24	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of people with private jobs and self-employed people

Since, the value of the calculated $|t|$ statistic (=5.24) is greater than the tabulated value of t (=1.96) and p -value (=0.00) for two tailed t test is less than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of self-employed people and people working in private companies.

9. Between Private Job and Students

	<i>Private</i>	<i>Students</i>
Mean	49.22	61.82
Variance	102.61	158.49
Observations	408.00	546.00
Pooled Variance	134.60	
Hypothesized Mean Difference	0.00	
df	952.00	
t Stat	-16.60	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of people working in private companies and students

Since, the value of the calculated |t| statistic (=16.60) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of students and people working in private companies.

10. Between Private Job and Teachers

	<i>Private</i>	<i>Teachers</i>
Mean	49.22	59.88
Variance	102.61	192.10
Observations	408.00	123.00
Pooled Variance	123.25	
Hypothesized Mean Difference	0.00	
df	529.00	
t Stat	-9.34	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of people with private jobs and teachers

Since, the value of the calculated |t| statistic (=9.34) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of teachers and people working in private companies.

11. Between Private Job and Unemployed People

	<i>Private</i>	<i>Unemployed</i>
Mean	49.22	60.75
Variance	102.61	220.53
Observations	408.00	57.00
Pooled Variance	116.87	
Hypothesized Mean Difference	0.00	
df	463.00	
t Stat	-7.54	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of people having private jobs and unemployed people

Since, the value of the calculated |t| statistic (=7.54) is greater than the tabulated value of t (=1.97) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of unemployed people and people working in private companies.

12. Between Retired and Self-employed People

	<i>Retired</i>	<i>Self-employed</i>
Mean	46.85	54.73
Variance	225.28	147.60
Observations	54.00	138.00
Pooled Variance	169.27	
Hypothesized Mean Difference	0.00	
df	190.00	
t Stat	-3.77	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of self-employed and retired people

Since, the value of the calculated |t| statistic (=3.77) is greater than the tabulated value of t (=1.97) and p-value (=0.00) for two tailed t test is less than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of self-employed people and retired people.

13. Between Retired People and Students

	<i>Retired</i>	<i>Students</i>
Mean	46.85	61.82
Variance	225.28	158.49
Observations	54.00	546.00
Pooled Variance	164.41	
Hypothesized Mean Difference	0.00	
df	598.00	
t Stat	-8.18	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of students and retired people

Since, the value of the calculated $|t|$ statistic ($=8.18$) is greater than the tabulated value of t ($=1.96$) and p -value ($=0.00$) for two tailed t test is smaller than the level of significance ($=0.05$), we **reject the null hypothesis**.

There is a significant difference between the stress levels of students and retired people.

14. Between Retired People and Teachers

	<i>Retired</i>	<i>Teachers</i>
Mean	46.85	59.84
Variance	225.28	190.73
Observations	54.00	124.00
Pooled Variance	201.13	
Hypothesized Mean Difference	0.00	
df	176.00	
t Stat	-5.62	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of teachers and retired people.

Since, the value of the calculated $|t|$ statistic ($=5.62$) is greater than the tabulated value of t ($=1.97$) and p -value ($=0.00$) for two tailed t test is smaller than the level of significance ($=0.05$), we **reject the null hypothesis**.

There is a significant difference between the stress levels of retired people and teachers.

15. Between Retired People and Unemployed People

	<i>Retired</i>	<i>Unemployed</i>
Mean	46.85	60.75
Variance	225.28	220.53
Observations	54.00	57.00
Pooled Variance	222.84	
Hypothesized Mean Difference	0.00	
df	109.00	
t Stat	-4.90	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.66	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.98	

Null Hypothesis: There is no significant difference between stress levels of unemployed people and retired people

Since, the value of the calculated |t| statistic (=4.90) is greater than the tabulated value of t (=1.98) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of retired people and unemployed people

16. Between Self-employed people and Students

	<i>Self-employed</i>	<i>Students</i>
Mean	54.73	61.82
Variance	147.60	158.49
Observations	138.00	546.00
Pooled Variance	156.30	
Hypothesized Mean Difference	0.00	
df	682.00	
t Stat	-5.95	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of self-employed people and students

Since, the value of the calculated |t| statistic (=5.95) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of self-employed people and students

17. Between Self-employed people and Teachers

	<i>Self-employed</i>	<i>Teachers</i>
Mean	54.73	59.88
Variance	147.60	192.10
Observations	138.00	123.00
Pooled Variance	168.56	
Hypothesized Mean Difference	0.00	
df	259.00	
t Stat	-3.20	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of self-employed people and teachers

Since, the value of the calculated $|t|$ statistic ($=3.20$) is greater than the tabulated value of t ($=1.97$) and p -value ($=0.00$) for two tailed t test is smaller than the level of significance ($=0.05$), we **reject the null hypothesis**.

There is a significant difference between the stress levels of self-employed people and teachers

18. Between Self-employed and Unemployed People

	<i>Self-employed</i>	<i>Unemployed</i>
Mean	54.73	60.75
Variance	147.60	220.53
Observations	138.00	57.00
Pooled Variance	168.76	
Hypothesized Mean Difference	0.00	
df	193.00	
t Stat	-2.94	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of self-employed and unemployed people

Since, the value of the calculated $|t|$ statistic ($=2.94$) is greater than the tabulated value of t ($=1.97$) and p -value ($=0.00$) for two tailed t test is smaller than the level of significance ($=0.05$), we **reject the null hypothesis**.

There is a significant difference between the stress levels of self-employed and unemployed people.

19. Between Students and Teachers

	<i>Students</i>	<i>Teachers</i>
Mean	61.82	59.88
Variance	158.49	192.10
Observations	546.00	123.00
Pooled Variance	164.64	
Hypothesized Mean Difference	0.00	
df	667.00	
t Stat	1.51	
P(T<=t) one-tail	0.07	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.13	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of students and teachers

Since, the value of the calculated |t| statistic (=1.51) is less than the tabulated value of t (=1.96) and p-value (=0.13) for two tailed t test is greater than the level of significance (=0.05), we **accept the null hypothesis**.

There is no significant difference between the stress levels of students and teachers.

20. Between Students and Unemployed People

	<i>Students</i>	<i>Unemployed</i>
Mean	61.82	60.75
Variance	158.49	220.53
Observations	546.00	57.00
Pooled Variance	164.27	
Hypothesized Mean Difference	0.00	
df	601.00	
t Stat	0.60	
P(T<=t) one-tail	0.27	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.55	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between stress levels of students and unemployed people

Since, the value of the calculated |t| statistic (=0.60) is less than the tabulated value of t (=1.96) and p-value (=0.55) for two tailed t test is greater than the level of significance (=0.05), we **accept the null hypothesis**.

There is no significant difference between the stress levels of government employees and people working in private companies.

21. Between Teachers and Unemployed People

	<i>Teachers</i>	<i>Unemployed</i>
Mean	59.88	60.75
Variance	192.10	220.53
Observations	123.00	57.00
Pooled Variance	201.04	
Hypothesized Mean Difference	0.00	
df	178.00	
t Stat	-0.38	
P(T<=t) one-tail	0.35	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.70	
t Critical two-tail	1.97	

Null Hypothesis: There is no significant difference between stress levels of teachers and unemployed people

Since, the value of the calculated $|t|$ statistic ($=0.38$) is less than the tabulated value of t ($=1.97$) and p -value ($=0.7$) for two tailed t test is greater than the level of significance ($=0.05$), we **accept the null hypothesis**.

There is no significant difference between the stress levels of government employees and people working in private companies.

THE SIGNIFICANT DIFFERENCE BETWEEN THE STRESS LEVELS OF WORKING AND NON-WORKING INDIVIDUALS

1. Working Population vs Students

	<i>Working</i>	<i>Students</i>
Mean	50.97	61.82
Variance	121.91	158.49
Observations	678.00	546.00
Pooled Variance	138.22	
Hypothesized Mean Difference	0.00	
df	1222.00	
t Stat	-16.05	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between the stress levels of Working Population and Students

Since, the value of the calculated |t| statistic (=16.05) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of working population and students.

2. Working Population vs Teachers

	<i>Working</i>	<i>Teachers</i>
Mean	50.97	59.88
Variance	121.91	192.10
Observations	678.00	123.00
Pooled Variance	132.62	
Hypothesized Mean Difference	0.00	
df	799.00	
t Stat	-7.90	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between the stress levels of Working Population and Teachers

Since, the value of the calculated |t| statistic (=7.90) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of working population and teachers.

3. Working Population vs Retired People

	<i>Working</i>	<i>Retired</i>
Mean	50.97	46.85
Variance	121.91	225.28
Observations	678.00	54.00
Pooled Variance	129.41	
Hypothesized Mean Difference	0.00	
df	730.00	
t Stat	2.56	
P(T<=t) one-tail	0.01	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.01	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between the stress levels of Working Population and Retired People

Since, the value of the calculated |t| statistic (=2.56) is greater than the tabulated value of t (=1.96) and p-value (=0.01) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of working population and teachers.

4. Working Population vs Unemployed

	<i>Working</i>	<i>Unemployed</i>
Mean	50.97	60.75
Variance	121.91	220.53
Observations	678.00	57.00
Pooled Variance	129.44	
Hypothesized Mean Difference	0.00	
df	733.00	
t Stat	-6.23	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.65	
P(T<=t) two-tail	0.00	
t Critical two-tail	1.96	

Null Hypothesis: There is no significant difference between the stress levels of Working Population and Unemployed People

Since, the value of the calculated |t| statistic (=6.23) is greater than the tabulated value of t (=1.96) and p-value (=0.00) for two tailed t test is smaller than the level of significance (=0.05), we **reject the null hypothesis**.

There is a significant difference between the stress levels of working population and teachers.

INTERPRETATION

Based on gender:

From the above analysis, we can conclude that gender plays a consequential role when it comes to the variation in the stress levels of individuals, as the mean value of stress levels in females is significantly different from that in males.

Based on occupations:

While government employees experience different stress levels from private employees, retired individuals, students, teachers and unemployed individuals, the t-test fails to detect any significant difference between the mean stress in government employees and self-employed individuals.

The level of stress in people working private jobs remains different from individuals belonging to all other occupations, except those who are retired in case of which, there is no significant difference between the mean stress.

Retired individuals experience significantly different stress levels as compared to all other occupations, and on a par with private job employees.

Students, teachers, unemployed people, private employees and retired people experience different stress levels from self-employed individuals, while government employees and self-employed individuals remain aligned.

When it comes to students, t-test fails to detect any significant difference between their mean stress level and the mean stress level of teachers or the mean level of stress of unemployed individuals who are not students.

There is also no significant difference in the stress levels of teachers and unemployed individuals.

Based on gender as well as occupation:

In case of any unique occupation, the two-sample t-test fails to recognise any significant difference in the stress levels of male and female individuals belonging to it.

Comparison between working and non-working individuals:

Working populations include government, private and business employees combined.

It is evident from the results that students experience significantly different stress levels from the whole of working population. Similar are the cases of teachers, retired and unemployed individuals.

Correlations

Next, we're interested in relationship between these categorical data. Sometimes it's quite helpful to find out how correlated the data is?

For example, whether there is correlation between stress & Anxiety or not? Whether increase in stress will increase the anxiety of a person?

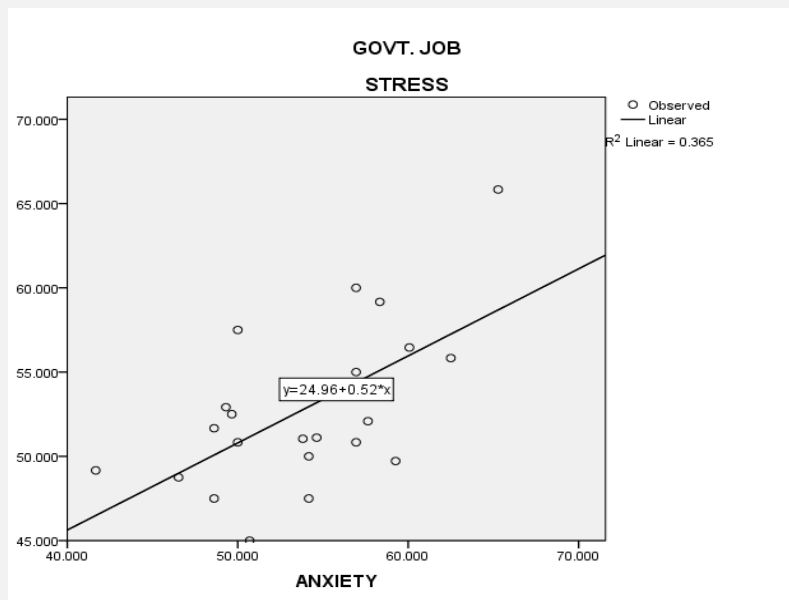
The following sub-topics have been analysed: -

a) CORRELATION AND REGRESSION BETWEEN STRESS AND ANXIETY

From the Data given, we can find that the correlation is 0.67681 which is approximately **0.68** which means there is a **positive relationship between stress and anxiety**. Here, we can say that as stress increases, anxiety also increases.

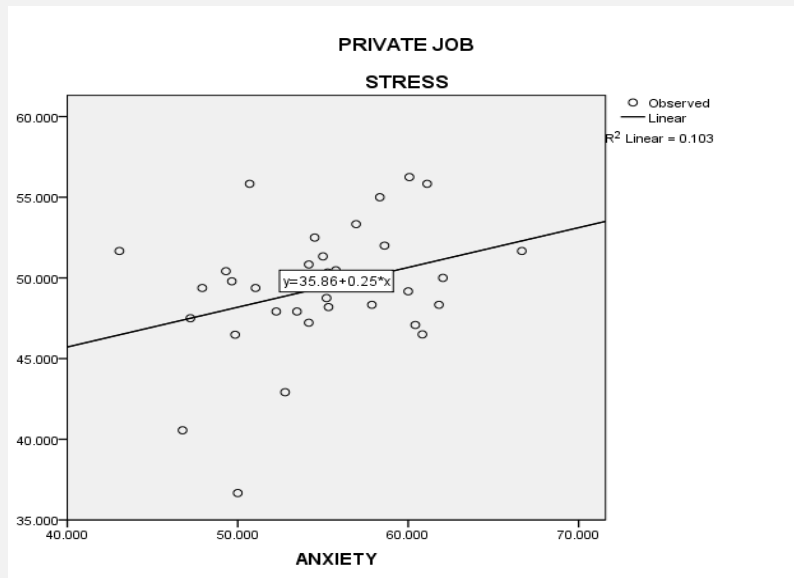
b) DIFFERENT OCCUPATIONS

(i) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE HAVING A GOVERNMENT JOB



From the given data, we can find that the people who have a govt. Job has a correlation of 0.604432 which means that there is a positive relationship between stress and anxiety for people working in govt. sector. Here, those people who are having a govt. job, we can say that as stress increases in them, anxiety also increases.

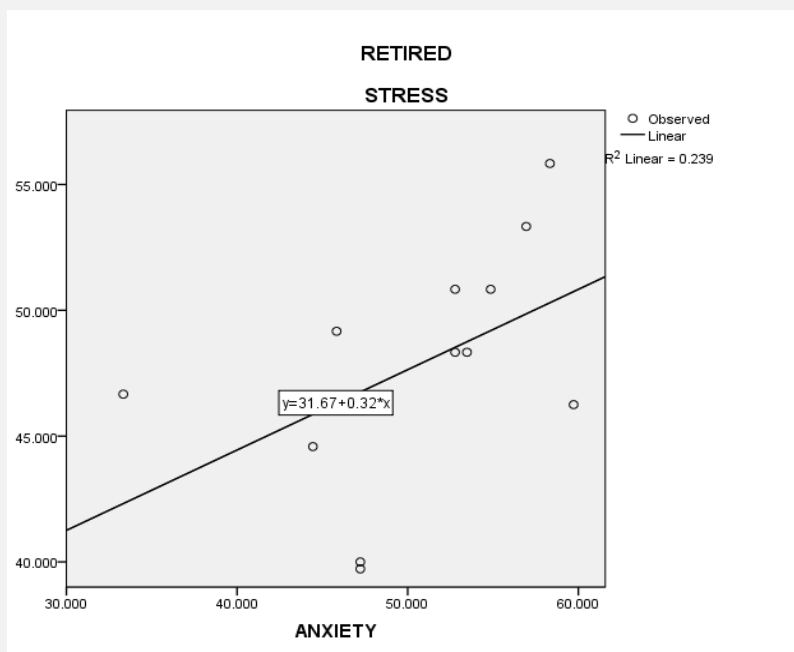
(ii) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE HAVING A PRIVATE JOB



From the given data, we can find that the people who have a private job has a correlation of 0.321442

which means that there is a positive relationship between stress and anxiety for people working in private sector. Here, those people who are having a private job, we can say that as stress increases in them, anxiety also increases.

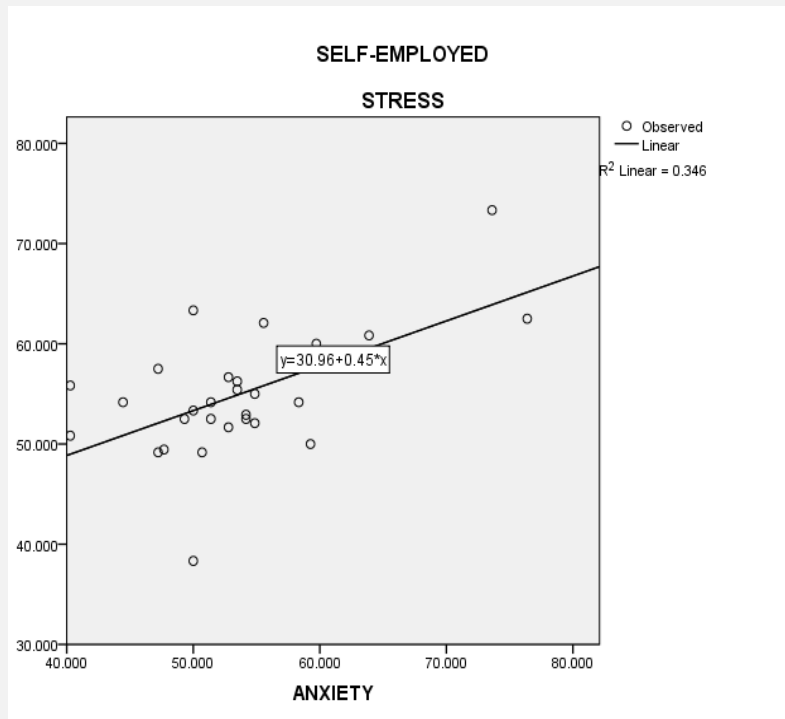
(iii) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE RETIRED



From the given data, we can find that the people who are retired has a correlation of 0.48900

which means that there is a positive relationship between stress and anxiety for people who are retired. Here, those people who are retired, we can say that as stress increases in them, anxiety also increases.

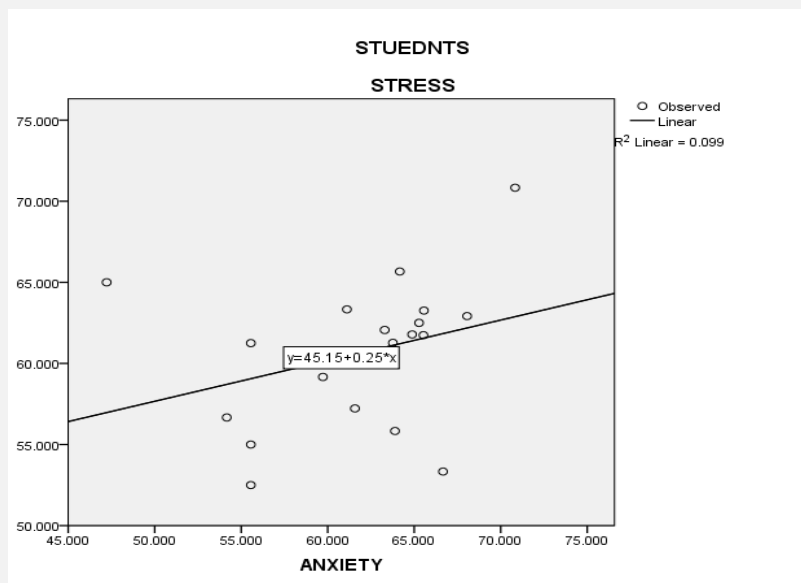
(iv) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE SELF-EMPLOYED



From the given data, we can find that the people who are self-employed has a correlation of 0.588198

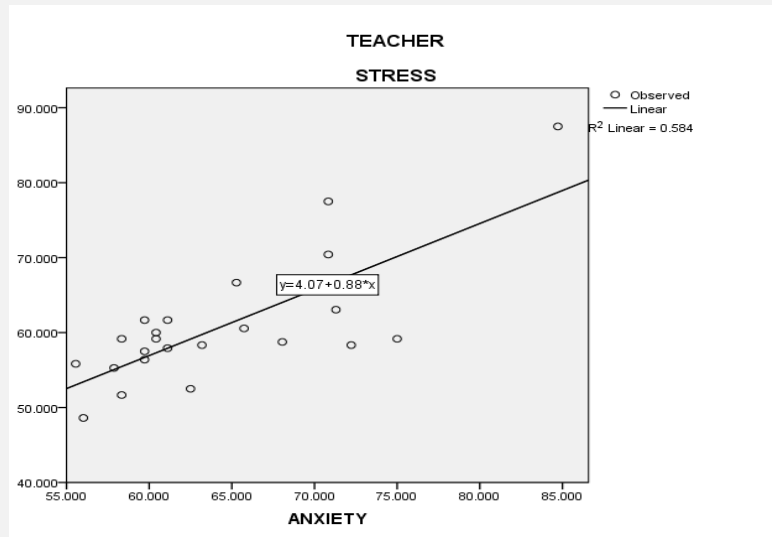
which means that there is a positive relationship between stress and anxiety for people who are self-employed. Here, those people who are self-employed, we can say that as stress increases in them, anxiety also increases.

(v) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE STUDENTS



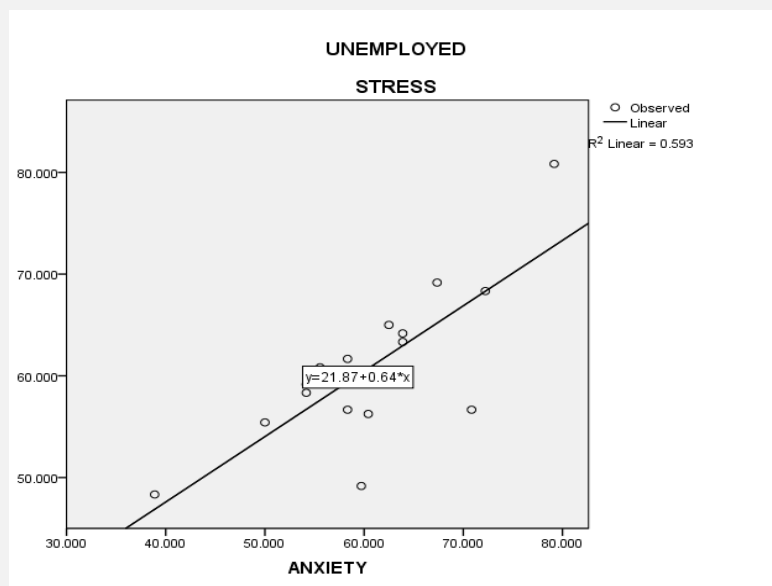
From the given data, we can find that students have a correlation of 0.315105 which means that there is a positive relationship between stress and anxiety for students. Here, in students, we can say that as stress increases in them, anxiety also increases.

(vi) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE TEACHERS



From the given data, we can find that teachers have a correlation of 0.764507 which means that there is a positive relationship between stress and anxiety for teachers. Here, in teachers, we can say that as stress increases in them, anxiety also increases.

(vii) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE UNEMPLOYED

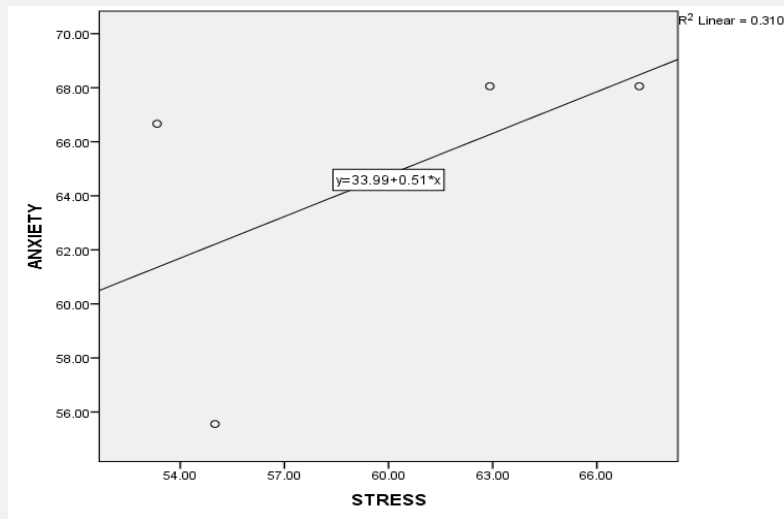


From the given data, we can find that the people are unemployed has a correlation of 0.769933

which means that there is a positive relationship between stress and anxiety for people who are unemployed. Here, those people who are employed, we can say that as stress increases in them, anxiety also increases.

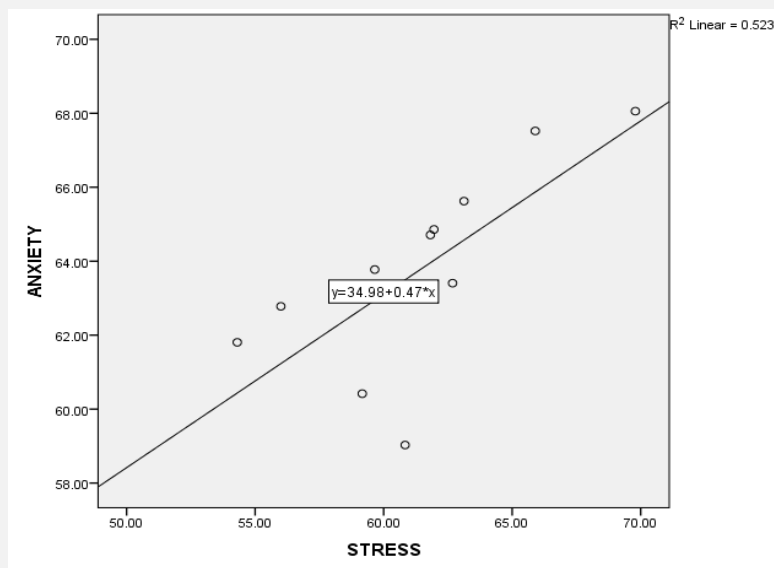
(c) DIFFERENT AGE GROUPS

(i) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE BELOW 18 YEARS



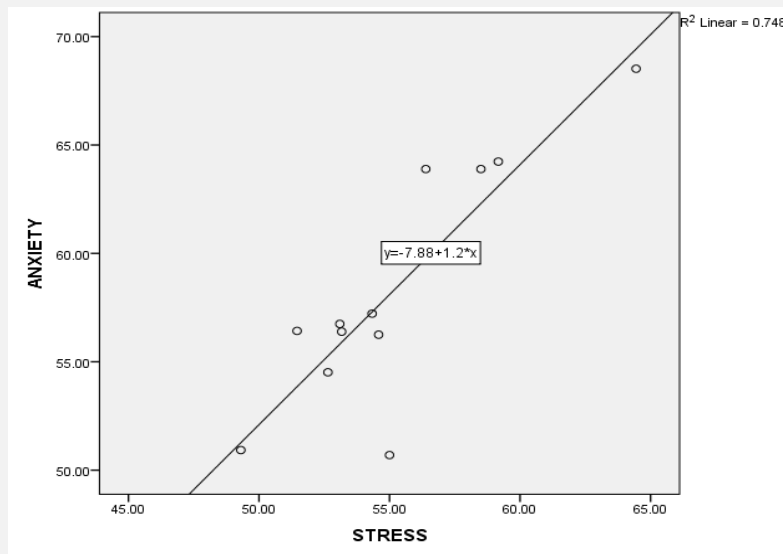
From the given data, we can find that the people below 18 has a correlation of 0.472367 which means that there is a positive relationship between stress and anxiety for people who are below 18. Here, those people who are below 18, we can say that as stress increases in them, anxiety also increases.

(ii) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE HAVING AN AGE IN THE INTERVAL OF 18-24 YEARS



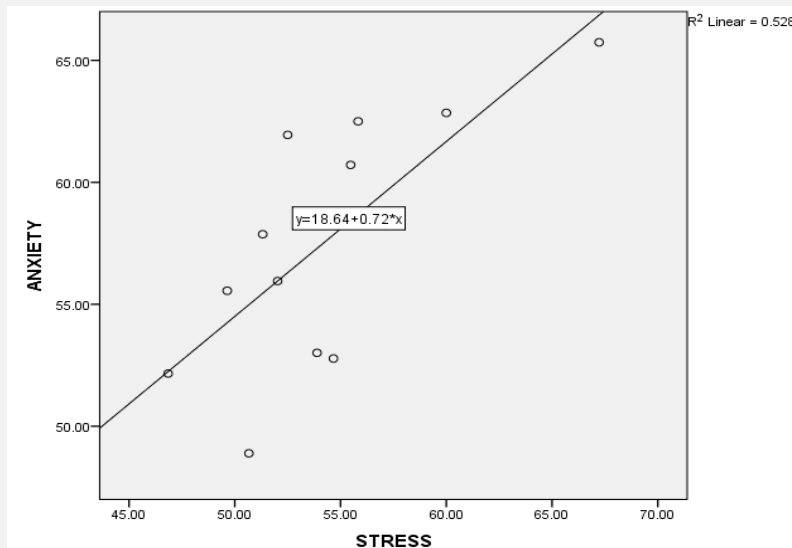
From the given data, we can find that the people having an age range of 18-24 has a correlation of 0.761413 which means that there is a positive relationship between stress and anxiety for people who are having an age range of 18-24. Here, those people who are having an age range of 18-24, we can say that as stress increases in them, anxiety also increases.

(iii) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE HAVING AN AGE IN THE INTERVAL OF 24-30 YEARS



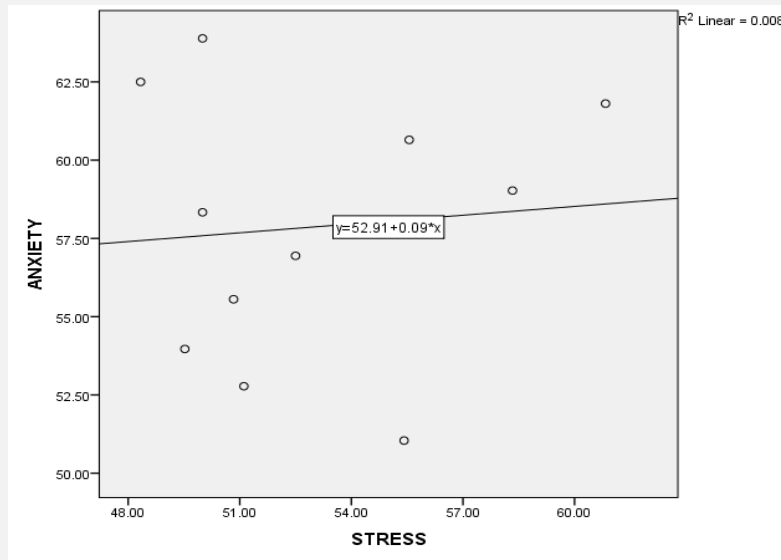
From the given data, we can find that the people having an age range of 24-30 has a correlation of 0.81769 which means that there is a positive relationship between stress and anxiety for people who are having an age range of 24-30. Here, those people who are having an age range of 24-30, we can say that as stress increases in them, anxiety also increases.

(iv) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE HAVING AN AGE IN THE INTERVAL OF 30-36 YEARS



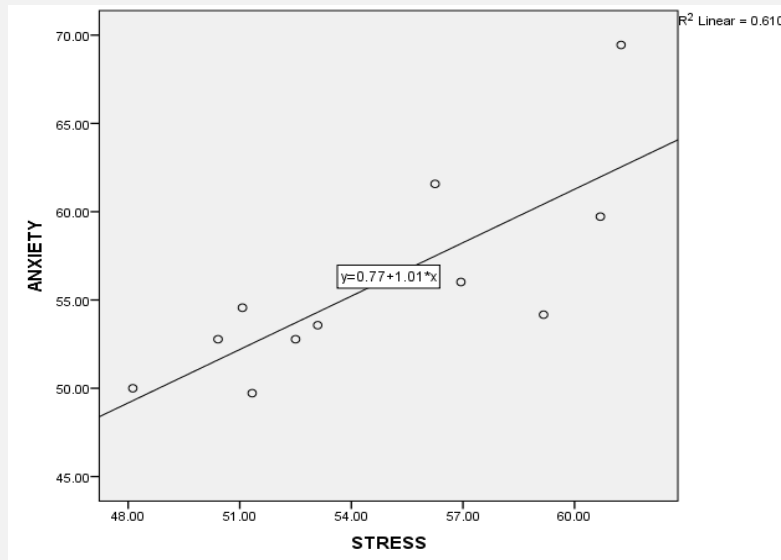
From the given data, we can find that the people having an age range of 30-36 has a correlation of 0.708663 which means that there is a positive relationship between stress and anxiety for people who are having an age range of 30-36. Here, those people who are having an age range of 30-36, we can say that as stress increases in them, anxiety also increases.

(v) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE HAVING AN AGE IN THE INTERVAL OF 36-42 YEARS



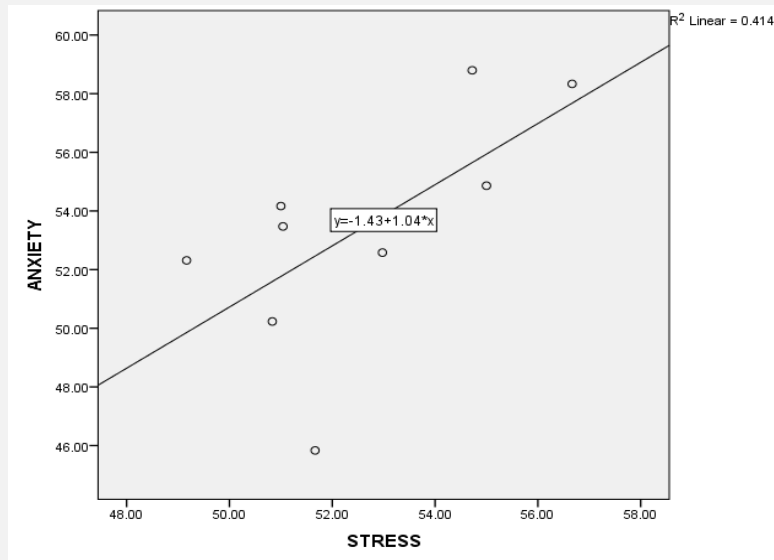
From the given data, we can find that the people having an age range of 36-42 has a correlation of 0.446135 which means that there is a positive relationship between stress and anxiety for people who are having an age range of 36-42. Here, those people who are having an age range of 36-42, we can say that as stress increases in them, anxiety also increases.

(vi) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE HAVING AN AGE IN THE INTERVAL OF 42-48 YEARS



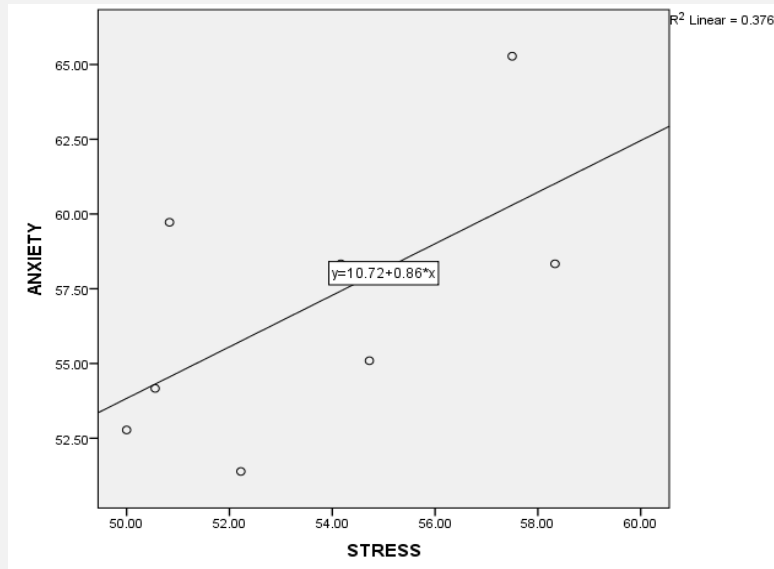
From the given data, we can find that the people having an age range of 42-48 has a correlation of 0.727697 which means that there is a positive relationship between stress and anxiety for people who are having an age range of 42-48. Here, those people who are having an age range of 42-48, we can say that as stress increases in them, anxiety also increases.

(vii) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE HAVING AN AGE IN THE INTERVAL OF 48-54 YEARS



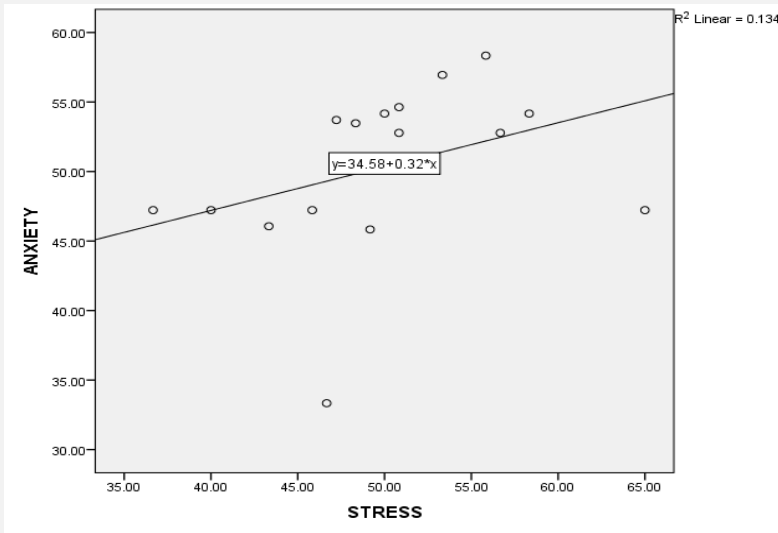
From the given data, we can find that the people having an age range of 48-54 has a correlation of 0.411139 which means that there is a positive relationship between stress and anxiety for people who are having an age range of 48-54. Here, those people who are having an age range of 48-54, we can say that as stress increases in them, anxiety also increases.

(viii) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE HAVING AN AGE IN THE INTERVAL OF 54-60 YEARS



From the given data, we can find that the people having an age range of 54-60 has a correlation of 0.456268 which means that there is a positive relationship between stress and anxiety for people who are having an age range of 54-60. Here, those people who are having an age range of 54-60, we can say that as stress increases in them, anxiety also increases.

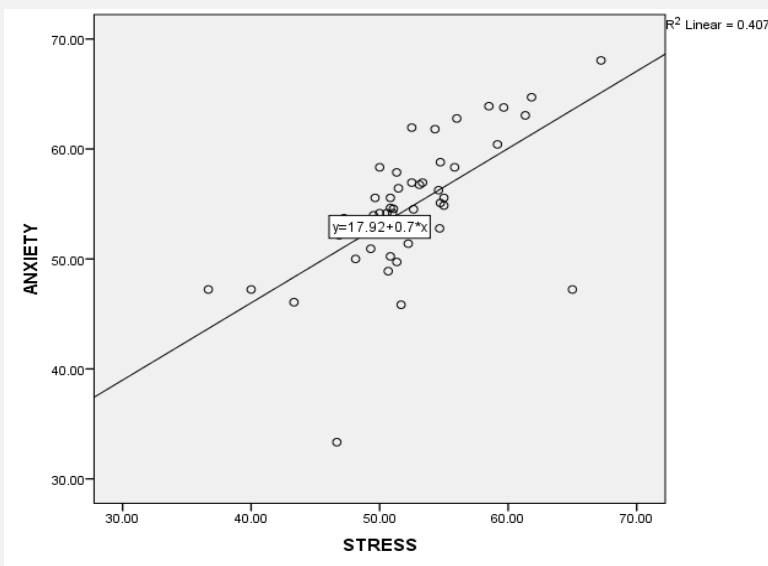
(ix) CORRELATION OF STRESS AND ANXIETY BETWEEN PEOPLE WHO ARE ABOVE 60 YEARS



From the given data, we can find that the people above 60 has a correlation of 0.317656 which means that there is a positive relationship between stress and anxiety for people who are above 60. Here, those people who are above 60, we can say that as stress increases in them, anxiety also increases.

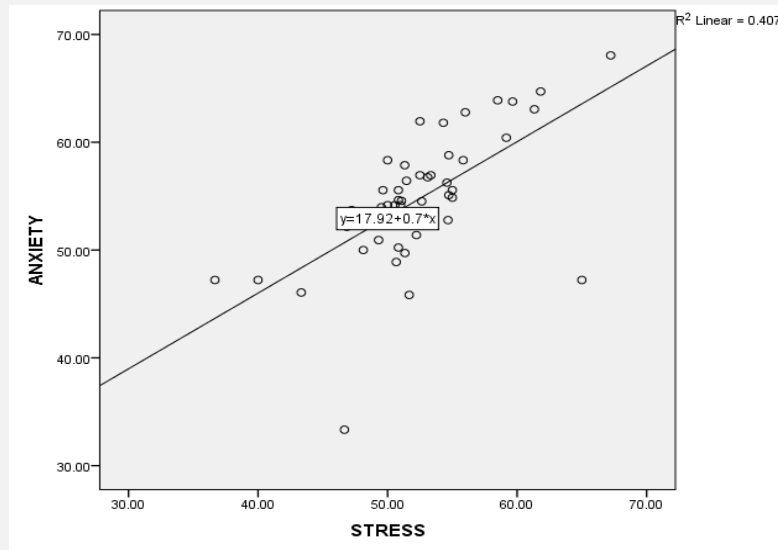
(d) DIFFERENT GENDERS

(i) CORRELATION OF STRESS AND ANXIETY OF PEOPLE WHO ARE MALE



From the given data, we can find that the male population has a correlation of 0.738404 which means that there is a positive relationship between stress and anxiety for male population. Here, for male population, we can say that as stress increases in them, anxiety also increases.

(ii) CORRELATION OF STRESS AND ANXIETY OF PEOPLE WHO ARE FEMALE



From the given data, we can find that the female population has a correlation of 0.925304 which means that there is a positive relationship between stress and anxiety for female population. Here, for female population, we can say that as stress increases in them, anxiety also increases.

OTHER RESULTS: -

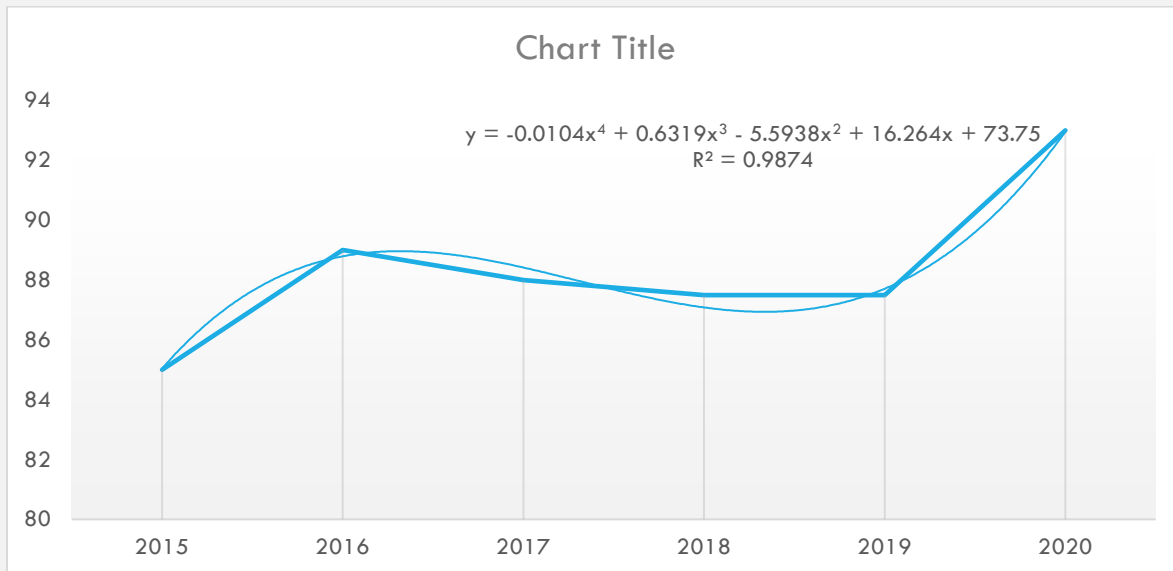
Here, we can see that every sub-group analyzed above has shown positive correlations with respect to stress and anxiety.

So, we can say that people from different age groups, gender and occupations suffer from stress and that to in a positive scale that it also causes stress simultaneously.

Now from the population taken, we can find that **94%** of the people are having stress.

Trend

Although we've done almost every analytical stuff, we were now interested how the stress level of our project differ from those of past results. We've collected the data for what percentage of people were stressed. Following we have plotted the graph for same:



From the figure it's quite clear the percentage of people affected due to stress has been increasing from the past 5 years.

The Stress is expected to increase further in 2021.

Although our area for collecting data was small, but for a metropolitan city like Delhi and NCR it's quite an alarming fact that the people are very stressed. We might have a more précised result if the area dealing would've been large, but we're quite confident it would've not differ much by our result.

Let's jump to our conclusion for what we have analyzed so far.

Conclusion

Taking into account all evidences from the data collected from a total of **1458 individuals** selected randomly from across Delhi, belonging to various occupations, genders and age groups, and calculating their levels of stress and anxiety with the help of the **Perceived Stress Scale (PSS)**, the following conclusions were made, based on a detailed analysis using the requisite statistical tools.

Considering that the average level of stress according to the Perceived Stress Scale is 35, 94% of all the people surveyed experience stress! In Statistics, inferences made from such samples speak volumes and so it is clear that mental health has been undermined for long now and should be given the care and recognition it needs.

The analysis threw light on the inference that on an average, the maximum stress was experienced by female students and least by retired females. The case was exactly the same when anxiety levels were taken into consideration. Male students experience maximum stress while unemployed male individuals experienced maximum anxiety. Retired males on the other hand, experienced least stress and anxiety. Students relatively experience more stress because of the current educational system where courses and learning programs that offer better future prospects and job offers are more sought than those that a student sincerely wants to pursue. Lower stress and anxiety level experienced by the retired population is only an indication of how a man disrupts his mental peace in the relentless materialistic pursuits of his life.

As a result of a detailed study of all the information we had at hand, the team found out that women experienced much more stress as well as anxiety in comparison to their male counterparts, even when each occupation was examined individually. However, taking into account the anxiety levels alone, unemployed and retired men were more affected by their female counterparts. When the data was dissected on the basis of age groups, it was again noted that females experienced more elevated mean stress and anxiety levels than males, except under the age of 18, where males experienced more stress. Many reasons may contribute to such results; the inability of the present day society to distribute responsibility for some of the more traditional women's roles among both genders equally, being the main.

After further testing of the data, the following conclusions were made:

- While government employees experience different stress levels from private employees, retired individuals, students, teachers and unemployed individuals, the t-test fails to detect any significant difference between the mean stress in government employees and self-employed individuals.
- The level of stress in people working private jobs remains different from individuals belonging to all other occupations, except those who are retired in case of which, there is no significant difference between the mean stress.
- Retired individuals experience significantly different stress levels as compared to all other occupations and on a par with private job employees.
- Students, teachers, unemployed people, private employees and retired people experience different stress levels from self-employed individuals, while government employees and self-employed individuals remain aligned.
- When it comes to students, t-test fails to detect any significant difference between their mean stress level and the mean stress level of teachers or the mean level of stress of unemployed individuals who are not students.
- There is also no significant difference in the stress levels of teachers and unemployed individuals.
- While the government employees experience different anxiety level from students and teachers and t-test fails to detect any significant difference in anxiety level between government employees and private employees, Retired individual, Self-employed, Unemployed individual.
- The level of anxiety in people working in private jobs remains different from students, teacher as well as from unemployed individual but t-test fail to detect any significant difference in anxiety level between private employees and government employees, self-employed, Retired individuals.
- Retired individuals experience significant difference in anxiety level as compared to all other occupations except government, private employees and Self-employed individuals.
- Students, teacher, Unemployed people experience different anxiety level from self-employed individuals while government, private employees, Retired individual have same anxiety level of that of self-employed individual.
- When it comes to students, the t-test fails to detect any significant difference between their mean anxiety level and the mean anxiety level of teachers or the mean level of anxiety of unemployed individuals who are not students.
- There is no significant difference in the anxiety level of teachers and unemployed individuals.

In a more detailed analysis, it was clear that

- There was a significant difference in level of stress among different occupation.
- The level of stress for different working population differed significantly.
- When checked through age group perspective, the average stress level doesn't differ significantly when checked on age group basis.
- The average stress levels among different employed treatments differed significantly.
- There was a significant difference in level of anxiety among different occupation.
- The levels of anxiety for different working populations differed significantly.
- The average anxiety level doesn't differ when checked on the perspective of age groups.
- The average levels of anxiety among different employed treatments differ significantly.

Individuals belonging to the ages 18-24 experienced maximum stress, and those belonging to ages below 18 experienced maximum anxiety levels. Least average stress and anxiety levels were experienced by individuals belonging to the age group above 60 years.

Stress and anxiety levels follow a decreasing trend as the age of the individual increases, with a few exceptions.

With the current educational system of the country, employment rate and the economy, it should not come as a shock that the youth is the most stressed as all responsibility for a more reliable present as well as future falls on their shoulders.

As far as anxiety is considered, teenagers, despite being the most affected by it, still hesitate to reach out for any help from their family or counselors, which is a situation that needs to be changed. It is sad that more guardians are not aware of what their children go through in the same environments that are considered safe.

It was also inferred by the team that stress and anxiety were like two hands of the same clock. A positive correlation was displayed between the two aspects, indicating that stress levels and anxiety levels increase simultaneously.

After being made familiar with all of the above stated conclusions, we were not surprised to find out that stress affects both our lifestyle as well as our relationship with people significantly.

Techniques to manage Stress & Anxiety

It's normal to experience stress and anxiety from time to time, and there are strategies you can use to make them more manageable. Pay attention to how your body and mind respond to stressful and anxiety-producing situations. Next time a stressful experience occurs, you'll be able to anticipate your reaction and it may be less disruptive.

Cognitive behavioral therapy (CBT) is a popular and effective method used to manage anxiety. This type of therapy teaches you to recognize anxious thoughts and behaviors and change them into more positive ones.

Other ways to deal with it are:

1. Exercise

Regular exercise can help lower stress and anxiety by releasing endorphins and improving your sleep and self-image.

2. Consider Supplements

Certain supplements can reduce stress and anxiety, including ashwagandha, omega-3 fatty acids, green tea and lemon balm.

3. Light a Candle

Aromatherapy can help lower anxiety and stress. Light a candle or use essential oils to benefit from calming scents.

4. Reduce Your Caffeine Intake

High quantities of caffeine can increase stress and anxiety. However, people's sensitivity to caffeine can vary greatly.

5. Write It Down

Keeping a journal can help relieve stress and anxiety, especially if you focus on the positive.

6. Chew Gum

According to several studies, chewing gum may help you relax. It may also promote wellbeing and reduce stress.

7. Spend Time With Friends and Family

Having strong social ties may help you get through stressful times and lower your risk of anxiety.

Team

Our team includes a total of 10 members from all 1st, 2nd and 3rd year of Statistics Department of Ramanujan College, University of Delhi. Each member of our project has done significant amount of work and put all their dedication to help for the completion of the project.

Team Members:

- Chirag Kohli (2nd yr)
- Manasvi Rawat (2nd yr)
- Ravi (2nd yr)
- Sanvi Arora (1st yr)

Sub-Heads:

- Ashwin B. Alikkal (3rd yr)
- Anuj (3rd yr)
- Satish Verma (3rd yr)
- Shubham Bhati (3rd yr)

Project Heads:



Akhil Gupta (3rd yr)



Ranit Chatterjee (3rd yr)

In Collaboration with:

